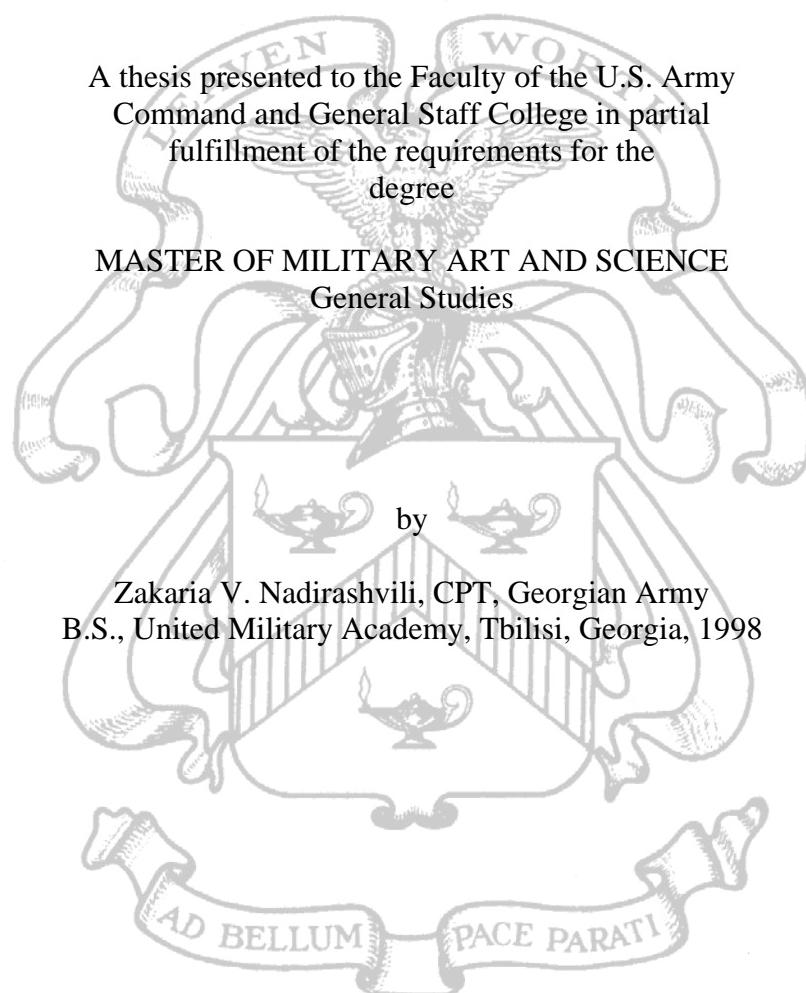


GEORGIAN LIGHT INFANTRY BATTALIONS
IN THE GLOBAL WAR ON TERRORISM



MASTER OF MILITARY ART AND SCIENCE
General Studies

Zakaria V. Nadirashvili, CPT, Georgian Army
B.S., United Military Academy, Tbilisi, Georgia, 1998

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Name of Candidate: CPT Zakaria V. Nadirashvili

Thesis Title: Georgian Light Infantry Battalions in the Global War on Terrorism

Approved by:

_____, Thesis Committee Chair
LTC John A. Schatzel, M.S.

_____, Member
Dennis L. Dolan, Ph.D.

_____, Member
LTC John R. Cantlon, B.S.

Accepted this 17th day of June 2005 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

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ABSTRACT

**GEORGIAN LIGHT INFANTRY BATTALIONS IN THE GLOBAL WAR ON
TERRORISM, by CPT Zakaria V. Nadirashvili, 101 pages.**

The Georgian government strongly follows the policy of supporting peace and stability in the country and abroad, including military participation. With a worldwide shift of battlefields from sparsely to highly populated areas, Georgian units will most probably find themselves participating in urban operations. The purpose of this study is to examine how prepared Georgian light infantry battalions are to meet the challenges of operations in urban environments. To answer this question, the thesis examines these battalions' capabilities against the most critical requirements, using the aspects of weapons, equipment, and training as a framework for discussion. The thesis identifies the need for further improvements and concludes with respective recommendations.

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ACRONYMS

ARTEP	Army Training and Evaluation Program
ATGM	Antitank Guided Missile
C2	Command and Control
CCO	Close Combat Optics
CLS	Combat Lifesaver
DOS	Day Optical Scope
GTEP	Georgia Train and Equip Program
GLIB	Georgian Light Infantry Battalion
GWOT	Global War on Terrorism
FM	US Army Field Manual
FO	Forward Observer
IFF	Identification, Friend or Foe
IR	Infrared
NBC	Nuclear, Biological, and Chemical
PGMM	Precision-Guided Mortar Munition
RPGL	Rocket-propelled Grenade Launchers
SRQ	Secondary Research Question
TC	Training Circular
TOE	Table of Organization and Equipment
TPP	Tactics, Techniques, and Procedures
TRQ	Tertiary Research Question
UO	Urban Operations
WMD	Weapons of Mass Destruction

CHAPTER 1

INTRODUCTION

I imagine what I could have done using a fistful of these warriors.

Napoleon Bonaparte

Background

After gaining its independence from the Soviet Union in 1991, the Republic of Georgia began building its own military forces, which for a decade consisted mainly of volunteers and some former Soviet militaries. In 2002 Georgia moved from a purely conscripted military force toward professional service Army units, which were trained under the United States' security assistance program by the US European Command. The Georgia Train and Equip Program (GTEP) began in May 2002 with the mission to strengthen selected Georgian military units' capabilities in order to enhance security and stability in Georgia and in the region.

The Georgian government strongly follows the policy of supporting peace and stability throughout the country and abroad. After 11 September 2001, the Georgian government decided to contribute forces to the Global War on Terrorism (GWOT). At the beginning of 2005, two light infantry battalions replaced the Georgian contingent of 150 men in Iraq. The government's decision was to send only professional service units to this and similar missions to come.

US Special Forces and later US Marines trained the 560-man light infantry battalions of the 11th Motorized Rifle Brigade "to conduct patrol base operations, ambush procedures, urban terrain operations, long-range patrols, platoon raids, and

daylight company attacks and night defensive operations” (Ovalle 2003a). The training, with focus on small-scale conventional military operations on nonurban terrain, determined what was needed to arm, equip, and train these units.

Statement of the Problem

Although readiness to conduct operations in an urban environment is a stated mission for Georgian Light Infantry Battalions (GLIBs) current weapons, equipment, and training do not fully reflect what is needed to succeed. The assumption seems to be that under the initial table of organization and equipment (TOE), these battalions are fully prepared to conduct any kind of military operation, although little has been done to rearm, reequip, and retrain them for conducting urban operations. The GTEP training package’s narrow scope poorly provides for countering an asymmetric threat, especially when civilians are present on the battlefield. As a potential enemy increasingly acquires a larger number of high-technological weapons and equipment and becomes more experienced at urban warfare, the GLIBs’ ability to effectively counter threats becomes questionable.

Analysis of the Problem

This study does not address all the possible environments in which these battalions might operate, nor does it address all the aspects inside the battalions. Rather, the purpose of this research is to examine the specific aspects of conducting urban operations as they relate to GLIBs in regard to weapons, equipment, and training in order to identify and provide recommendations.

The Research Question

The primary research question this thesis will answer is: Do GLIBs require additional weapons, equipment, and training to establish niche capability for urban operations?

The Subordinate Research Questions

Secondary research questions (SRQs) and tertiary research questions (TRQs) include the following:

SRQ1. What are the key capabilities a light infantry battalion must have in order to conduct urban operations?

TRQ1.1. What are the most critical requirements in regard to weapons?

TRQ1.2. What are the most critical requirements in regard to equipment?

TRQ1.3. What are the most critical requirements in regard to training skills?

SRQ2. What capabilities do GLIBs currently possess?

TRQ2.1. How effectively do weapons under the current TOE, satisfy critical capability requirements?

TRQ2.2. How effectively does equipment under the current TOE satisfy critical capability requirements?

TRQ2.3. How effectively does GLIB training satisfy critical capability requirements?

SRQ3. What additional weapons, equipment, and training do GLIBs need to establish niche capability for urban operations?

TRQ3.1. What weapons can be given to GLIBs in order to establish niche capability for urban operations?

TRQ3.2. What equipment can be given to GLIBs in order to establish niche capability for urban operations?

TRQ3.3. What additional or substitute training can be given to GLIBs in order to establish niche capability for urban operations?

Definitions

Doctrinal definitions for terms used in the thesis are in the Glossary. Definitions used solely for the purpose of this research include the following:

Equipment. Personal gear and outfit and individual equipment, excluding weapons, transportation assets, computer hardware, and crew-served equipment.

Niche capability for urban operations. Capability to conduct urban operations under any circumstances with minimum friendly or collateral casualties by using optimum arming, equipping, or training capabilities the parent organization can provide.

Sharpshooter. The best marksman in the squad, equipped with a rifle with telescopic sight.

Weapons. Any type of individual weapon (including sidearms, automatic and semiautomatic, and antitank weapons), two-man-crew machine gun, and antitank weapon (for two-man machine gun and antitank teams under the current TOE), light and medium mortars, and ammunition for all these weapons.

Assumptions

The assumptions of this thesis are that:

1. Regional problems will not tie up all GLIBs with other tasks and they will be available for participation in GWOT.
2. Georgian Armed Forces will not change the TOE of Army light infantry battalions before June 2005, so the recommendations are effective.
3. The mission essential task list (METL) of GLIBs is assumed to contain the same tasks as provided by GTEP. The assumption does not exclude the training at a higher unit level. For example, if the battalion was trained for “company level attack” under the GTEP, it will be assumed that the task “attack” was not replaced by another task such as “conduct delay.” It does not exclude the possibility of units being trained at a level higher; that is, in battalion-level “attack.”

Limitations

Because training evaluation material is restricted by the Army, the GLIBs will be considered trained for all the current METL tasks throughout this research.

Lessons learned from the Georgian Army light infantry battalions that are currently deployed to Iraq would be of a great value. However, because of bureaucratic problems, acquiring accurate and releasable after action reports (AAR) most probably will be impossible, at least during the year after the conduct of rotation.

Delimitations

The research will only review lessons learned from 3 December 1992 (after US Army participation in Operation Restore Hope in Somalia) until the end of 2003. Reasons for this delimitation are explained in chapter 2.

The research will not consider the possibilities of changes of subordinate unit types or structures inside the GLIBs.

Significance of the Study

As stated above, GLIBs will have to be prepared to participate in the Global War on Terrorism. With the increased movement of the battlefield into urban areas and the increased presence of civilians in the area of operations, GLIBs will most likely operate in urban areas where civilians will be present.

This study will attempt to identify the difference between the required capabilities for the conduct of urban operations and current capabilities of the GLIBs. If successfully accomplished, the research will provide practical recommendations to replace or augment current weapons, equipment, and training that will, ideally, be implemented in real life. The practical benefit of such recommendations, if used, will be the increased mission capabilities of Georgian Army light infantry battalions in future operations and the potential decrease of losses.

CHAPTER 2

LITERATURE REVIEW

The vast amount of literature about the infantry in general and urban operations in particular provides an unreasonably large amount of information, so only a portion can be addressed in this paper. This chapter is organized in two major parts. The first part explains the criteria used to select the most useful reference material. The second part provides a general review of sources by subject.

Criteria

Four main criteria were used to select the most optimum material for the purpose of this research: classification, relevance, timeliness, and accuracy.

Classification

Only unclassified sources were used for reference. Restricting the use of material to only that approved for public release partially prevented being able to go into depth in some sensitive areas, but doing so allows the unlimited distribution of the final product to a variety of nonmilitary and even nongovernmental organizations and the general public. Also, the document will be able to legally follow unofficial channels and, thus, ensure faster dissemination inside the Georgian Armed Forces. The intent is to facilitate timely discussions and decisions to follow the given recommendations rather than to produce complete research that would be inaccessible to many users.

Relevance

A vast amount of bulk information that covers the various armies and different periods of history is available about light infantry units. The focus in this regard was mainly on US Army doctrine; tactics, techniques, and procedures (TTP); and lessons learned to ensure the most direct relevance to Georgian Army units. As mentioned, GLIBs are trained and equipped through the GTEP by US personnel under US doctrine. Battalion organization also reflects the organization of US Army light infantry battalions. Most important, because of a temporary vacuum in Georgian doctrinal publications, GLIBs directly refer to US doctrine and TTP where applicable. The reasons mentioned here make it clear why US Army publications and lessons learned, particularly those about light infantry units, were regarded the most optimal references to facilitate conclusions about GLIBs. This criterion does not totally exclude the use of other sources to address specific details wherever reasonable.

Timeliness

Timeliness of available sources was another important criterion considered. Even when restricted to unclassified references, approved for public release, and focused on US doctrinal publications and lessons learned, the volume of information remains vast. To ensure the most profitable use of the material and to feasibly cover and analyze it into an appropriate depth in the limited time available, the research was focused on the period from 1992 to the beginning of 2004, exclusive. The reason for this limitation was to address case studies more relative to today. Operation Restore Hope and UNOSOM, Somalia, 1992-1994, are the earliest lessons learned to be considered. The reason for limiting the period of focus to before 2004--the year research began--is (to use Colonel

Gregory Fontenot's words), that "it takes time for the record of events to be completed, and generally it takes the perspective of time to come to grips with happened and what it meant" (Fontenot, Degen, Tohn 2004, v). To keep the research as up to date as possible, however, specific events that occurred later might also be used to address specific details or to narrow aspects of the subject.

Accuracy

Accuracy is the most important criterion for the available sources. As the topic is relatively recent, not all documents are revised and published in printed products. A significant part of the reports and lessons learned are available on-line. The most problematic issue was in gathering documentation that accurately described GLIB training and TOE, especially concerning weapons, equipment, and training. For credibility reasons, only government and military on-line sources were used.

Review of Sources

The review of the material available about the research topic follows the secondary research questions of the thesis. That is, literature will be reviewed as it relates to key capabilities a light infantry battalion must have in order to conduct urban operations; current capabilities of GLIBs; and additional weapons, equipment, and training GLIBs need to establish niche capability for urban operations.

Key Capabilities Required for Urban Operations

There are several important topics that relate to the capabilities light infantry battalions must have in urban operations (UO). These topics include, among others, future threats; various aspects of UO; effectiveness of different weapons, equipment, and

training; and relevant lessons learned from recent history. There is an enormous body of work devoted to each of these topics, but they can be generally grouped into four major categories: doctrinal publications, books, periodicals and articles, and related research.

Doctrinal Publications

Doctrinal publications represent the primary sources used in this work. They also incorporate lessons learned from previous operations and are referred to wherever possible to avoid inaccurate conclusions and to maintain focus on the research question. To determine future threats, operational environment, and critical capability requirements for light infantry battalions, two large groups of US Army field manuals (FMs) were consulted: 3-series and 7-series. Other FMs and doctrinal publications provide more specific details on particular aspects.

3-Series Field Manuals

FM 3-0, *Operations*, is “the Army’s keystone doctrine for full spectrum operations” (2001, vii). It provides overarching doctrinal directions for the conduct of operations, which is further detailed in other FMs. FM 3-90, *Tactics*, focuses on tactical-level offensive and defensive operations and, therefore, should be used in relation to full spectrum operations in conjunction with FM 3-07, *Stability Operations and Support Operations* (FM 3-90 2001, xiii; FM 3-07 1990). While these FMs describe the overall Army framework for full spectrum operations, FM 3-06, *Urban Operations*, and FM 3-06.11, *Combined Arms Operations in Urban Terrain*, provide more details pertinent to the operations in this specific environment (FM 3-06 2003; FM 3-06.11 2002). FM 3-06 is a valuable tool for evaluating the urban environment and in understanding and

determining its impact on military operations. The manual “demonstrates how to apply doctrinal principles in FM 3-0 to this unique environment” (FM 3-06 2003, viii). FM 3-06.11 also recognizes that “urban areas will most probably constitute the future battlefield” and addresses urban operations in even more detail than FM 3-06, providing infantry “battalion commanders and staffs, company commanders, small-unit leaders, and individual Infantrymen with considerations and combined arms TTP” (2002, x).

Other 3-series FMs were consulted for additional details, as required, in areas not specifically associated with infantry units. FM 3-11, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Defense Operations*, was “a key reference for the planning and execution of service [nuclear, biological, and chemical] NBC defense operations” (2003, i). FM 3-13, *Information Operations Doctrine, Tactics, Techniques, and Procedures*, provides a framework for application of information as an element of combat power; “As the Army’s key integrating manual for IO, this manual prescribes IO doctrine and tactics, techniques, and procedures” (2003, iii). FM 3-21.21, *The Stryker Brigade Combat Team Infantry Battalion*, has less applicability to GLIBs in regard to TTP. Rather, it is used as a reference to determine “current trends [and] worldwide potential for various forms of conflict” and to visualize the future operational environment in which GLIBs will most probably operate (2003, xiii). All 3-series FMs are referred to when addressing requirements and considerations regarding the employment of light infantry in future urban operations as currently envisioned by the US Army. The applicability of these issues to Georgian Army units, and particularly to GLIBs, was then analyzed.

7-Series Field Manuals

FM 7-0, *Training the Force*, “the Army’s capstone training doctrine … is applicable to all units, at all levels, and in all components” (2002, iv). While primarily focusing on division level and below, this manual provides “the essential fundamentals for all individual, leader, and unit training” (FM 7-0. 2002, iv). FM 7-0 supersedes FM 25-100 (15 November 1998), which established training doctrine for the GTEP training period. FM 7-0 defines “training for warfighting [as the] number one priority in peace and in war” (2002, iv). This approach is used as one of the basic principles for this research.

FM 7-8, *Infantry Rifle Platoon and Squad*, and FM 7-10, *The Infantry Rifle Company*, respectively, provide “doctrine, tactics, techniques, and procedures on how infantry rifle platoons and squads” (FM 7-8. 2001, vi) and “all infantry rifle companies fight” (FM 7-10. 2000, vii). Even if not directly cited in this thesis, they are important in providing the basis for the discussion of required capabilities as it relates to light infantry units. FM 7-20, *The Infantry Battalion*, “presents doctrine for the infantry battalion [and] establishes a common base of tactical knowledge” (2000, viii). Even with the main focus on the battalion level, aspects addressed in FM 7-20 apply as well to companies and platoons in the urban environment where fighting is often conducted at the small-unit level and decentralized execution is the key to success. FM 7-90, *Tactical Employment of Mortars*, “serves as a doctrinal reference for the employment of mortar squads, sections, and platoons,” providing guidance on how these units execute their part of combat operations described in company- and battalion-level FMs (1992, vii). Most important, FM 7-90 is a valuable “source document for the combat critical tasks and missions of

mortar sections and platoons” (1992, vii). In general, 7-series FMs provide more specific details and overall guidelines and aspects than are covered in 3-series FMs.

Other Field Manuals

Other FMs were researched to cover specific issues not directly addressed in 3- and 7-series FMs, as they relate to the research question. FM 22-100, *Army Leadership*, the “capstone leadership manual for the Army [which] establishes the Amy’s leadership doctrine,” provides the doctrinal framework for assessing leader development requirements and battalion capabilities in this regard (1999, vii). FM 100-8, *The Army in Multinational Operations*, provides “a guide for Army commanders and staffs operating in a multinational environment,” covering the full spectrum of military operations (1997, iv). Further, FM 100-8 is used as a checklist to address challenges and requirements infantry units face in preparing for and conducting multinational operations and as a framework to assess the current capabilities of GLIBs and to determine shortfalls in this respect. FM 23-90, *Mortars*, prescribes guidance and “presents practical solutions to assist in the timely delivery of accurate mortar fires” (2002, ix). It also addresses problems of mortar crew training at squad and section levels and specific details as it relates to mortar unit training and tactical employment in urban operations. FM 23-91, which “discusses the practical applications of ballistics and system” of 60-, 81-, and 120-millimeter mortars (2000, v), provides specific details on operational procedures of fire direction center (Part Two) and capabilities and the use of mortar ballistic computers (Part Three). FMs constitute the largest, but not the only, part of doctrinal reference material.

Other Doctrinal Publications

Other important parts of doctrinal publications referred to include Army Training and Evaluation Program (ARTEP) publications and training circulars (TCs). ARTEPs are the primary reference for unit training and evaluation. Publications targeting infantry rifle squads, platoons, and companies and infantry battalions were referred to in order to establish relevant framework, criteria, and principal guidelines throughout this research, as they relate to training. ARTEP 7-8-DRILL, *Battle Drills for the Infantry Rifle Platoon and Squad*, “provides a set of core battle drills for the infantry rifle platoon and squad,” while recognizing battle drill training as a key factor in producing combat-ready units (2002, ii). ARTEP 7-10-MTP, *Mission Training Plan for the Infantry Rifle Company*, provides “a descriptive, mission-oriented training program to train the infantry company to perform its critical wartime missions” (2002, iii). This publication provides useful information by listing the primary training tasks that units must be able to execute to standards. ARTEP 7-20-MTP, *Mission Training Plan for the Infantry Battalion*, provides training guidance for infantry units, including light infantry battalions, and also limits itself to “critical wartime missions” (2001, iii). Training Circular 90-1, *Training for Urban Operations*, “is a training support package for training urban operations . . . across the full spectrum of Army operations” and emphasizes the use of home station urban training facilities (2002, iii). It provides valuable information for the research in regard to requirements for the facilities and technical aspects of urban training. These doctrinal publications together provide a more in-depth view on technical aspects not covered in detail in respective FMs.

Books

There are many books devoted to subject-related issues, especially experiences of past urban operations and lessons learned. An extremely time-consuming analysis of this contradictory, and sometimes mutually exclusive, material for research purposes would divert focus from the main question to the source comparison and potentially could be misleading. To avoid such confusion, only a few books are used to provide illustrative examples of lessons learned and conclusions provided in doctrinal publications rather than attempting to derive any conclusions. Other books represent a summary of operational trends and observations in regard to urban operations. Due to their large quantity, it is not reasonable to list all the background literature available. Several books, directly quoted in this thesis, however, need to be briefly addressed in particular.

Somalia Operations: Lessons Learned by Kenneth Allard provides an overview of operational experience throughout the summer of 1992 to the spring of 1994, inclusive, when a successful, but costly clash of American units with local militia resulted in withdrawal from Somalia. The book is especially significant as it “represents the first time a new tool – the Joint Universal Lessons Learned System--is being used to evaluate an operation in its totality” (1995, xi). *Russia’s Chechen Wars 1994-2000: Lessons from Urban Combat*, by Olga Oliker, represents a credible source “as a component of a project on military operations on urbanized terrain,” co-sponsored by the Office of the Deputy Assistant Secretary of the Army for Research and Technology and the office of the Deputy Chief of Staff for Intelligence, US Army (2001, iii). The report provides an analysis of Russian capabilities and operations, and a better understanding of urban lessons generally, “to be drawn for other states” (2001, iii). Another book that is a major

source of lessons learned is *On Point: The United States Army in Operation Iraqi Freedom*, by G. Fontenot, E.J. Degen, and D. Tohn (2004). *On Point* is a study of Operation Iraqi Freedom as soon after the fact as feasible” (2004, iii). The book is a successful effort by Operation Iraqi Freedom Study Group to capture the Army’s strategic, operational, and tactical lessons by processing a large number of related documents and interviews.

Periodicals and Articles

For the purpose of determining required capabilities for infantry units, periodicals and articles are used to provide more insight into specific aspects of lessons learned, particular technical details, and an overview of relatively new ideas, not directly addressed in FMs. Not surprisingly, the majority of these articles are found in *Infantry* magazine. “Mogadishu, October 1993: A Company [executive officer’s] XO’s Notes on Lessons Learned,” by Charles P. Ferry, presents a detailed account on “the lessons learned during those operations,” from Ferry’s perspective as executive officer of Company A (Ferry 1994, 31). “Echoes of Chechnya Warfare Resound in Moscow, Quantico,” by Robert K. Ackerman, provides a review of “experiences gleaned in Caucasus urban battles” during the Chechnya war as it relates to the “planning of future operations” (Ackerman, 2000). Another article addressing the Chechyan experience--“Kings of the Road: Heavy and Light Forces in [military operations on urbanized terrain] MOUT,” by John W. Karagosian and Christopher M. Goglianese, provides insight on combined arms warfare as it relates to armor and infantry forces. This article is also valuable as one of the few unclassified sources providing some technical details on the capabilities and limitations of RPG and Russian main battle tanks. Useful technical

details on Soviet model weapons, which GLIBs currently use, are also found in “Russian 40mm Grenades and Launchers,” by Adam Geibel.

A relatively new concept of sharpshooters, not directly addressed in doctrinal publications, is thoroughly explained in “The Case for Squad Sharpshooters,” by Michael R. Harris, who also discusses aspects of “significant tactical advantage” that this concept offers (Harris 1999, 23). Finally, “Fire and Maneuver Effects,” by William F. Owen, provides an overview of such important aspects for infantry as surprise, shock, suppression, and isolation. Factors associated with suppression are particularly relevant to this research, as they directly relate to discussions in regard to the lethality and weight of GLIB weapons determined by the caliber.

This brief overview addresses the periodicals and articles that were referred to determine the requirements for light infantry units. Another significant group of documentary articles, used to examine current capabilities of GLIBs, will be discussed later in this chapter.

Related Research

A number of works were also consulted to ensure the research topic had not previously been explored. These sources included previously published MMAS theses that were especially valuable for this research, including the following: “Guerrilla Warfare Tactics in Urban Environments,” by MAJ Patrick D. Marques (2003), which provides options with which to fill the doctrinal gap in describing guerrilla warfare. Namely, while doctrine focuses on guerrilla warfare in the rural environment, Marques’s work brings up issues specific to urban guerrilla warfare and provides additional considerations of a future threat in urban operations. Another work important to this

research is “Accepting the Challenge: Examining Infantry and Military Police Employment of Competencies on the Twenty-First Century Battlefield,” by MAJ John P. DiGiambattista. DiGiambattista provides useful recommendations on how to train future infantry forces, using different approaches to training. Finally, “Commonalities in Russian Military Operations in Urban Environments,” by MAJ Dale R. Smith, identifies some trends in Russian urban warfare and helps to better understand the operational experience gained in Chechnya.

Georgian Light Infantry Battalion Capabilities

On-line articles constitute the only reference material directly describing weapons, equipment, and training of GLIBs. For credibility reasons, only articles by Georgian or US military and other government sources were used to avoid subjectively distorted information by other parties that might want to discredit the GTEP.

“Evaluation of Georgian Military Co-Operation with Partner Countries and Institutions,” by George Manjgaladze, on behalf of the Ministry of Defense of Georgia, and “Georgia ‘Train and Equip’ Program Begins,” news releases from the US Department of Defense, outline the general scope and future directions of the GTEP under which GLIBs were trained. “Georgia Train and Equip Program Fact Sheet,” prepared by Teresa Ovalle (US Marine Forces Europe), provides more specific details in this regard.

A significant number of articles are available on-line from the Marine Forces Europe. The articles provide detailed accounts on GLIB training within the limits of information security. Without the dedicated effort by US Marines, who precisely

documented GLIB training under the GTEP, this research would have encountered excessive, time-consuming routine work and possibly would not be as complete.

Additional Requirements for GLIB Infantry Battalion Improvement

There were no sources identified in respect to requirements for improving GLIB capabilities. No related works are available publicly. The existing informational vacuum around the requirements for further development underscores the importance of this research. Even if it is not all-inclusive--and far from being perfect--this thesis initiates documented discussions of how GLIB capabilities can further be improved and offers an initial framework in this regard.

The purpose of this chapter is to provide criteria used in selecting reference material and to briefly review the material itself. The next chapter explains how these sources were used in support of the overall research.

CHAPTER 3

RESEARCH METHODOLOGY

Background

Additional or alternative weapons, equipment, and training for GLIBs will be better understood if the reason for questioning the current TOE and training is explained first. The effectiveness of GTEP against its mission and how GLIBs were shaped and prepared under the GTEP program is not an issue. Rather, the difference in mission and operational environment between what the units were created and trained for and what they are required to do currently and in the future is an issue. Under GTEP, all GLIBs were trained in the “fundamental combat mission of the infantry battalion [–] to close with the enemy by means of fire and maneuver to destroy or capture him or to repel his assaults by fire, close combat, and counterattack” (FM 7-20 2000, 1-3). GLIB armament, equipment, and preparation did not sufficiently address specific requirements of full spectrum urban operations.

Research Framework

The background of the problem, given previously, outlined the methodology of this research. An analytical approach to the subject was used, supported by lessons learned by similar units in similar operations. Analysis identifies the most likely missions GLIBs will have in GWOT in the future, including ongoing missions, and the most likely environment in which they will operate. Because of the limitations in the scope of this thesis, only urban terrain was considered. To make the organization easy to follow, requirements are consequentially discussed for weapons, equipment, and training, each

being examined separately as they apply to the capability requirement for each. For example, instead of discussing weapons, equipment, and training under survivability capabilities, survivability is one of the points separately discussed under each element.

Georgia has a short, but still valuable, history of participation in GWOT with company- and battalion-level units in Iraq. One might wonder why the question this work examines cannot be answered by simply looking at lessons learned from this particular operation. Among a number of reasons, two are the most important. The first reason is that the experience GLIBs receive on the ground, although truly valuable, is limited to specific Mission, Enemy, Terrain, Troops, Time Available, and Civilians on the Battlefield (METTT-C) conditions, and is not all-inclusive. In this regard, it can be even misleading. The second reason, consequential to first, is best expressed by a quote from Vince Lombardi: “Practice does not make perfect, perfect practice makes perfect.” In other words, a particular situation can later show some GLIB capabilities that need improvement. Unfortunately, such a need will most likely be expressed in high number of casualties or mission failure. The goal of this study is to identify weaknesses and ways of improvement, well in advance, so they can be sufficiently addressed, minimized, or eliminated.

Determining Operational Environment and Threat

Correctly determining a future operational environment is one of the most critical tasks for this work, because the operational environment is the starting point for determining all of the requirements for units. US doctrine was used for this task because it serves as a temporary doctrinal basis for GLIBs, and it determines the aims and conduct of the GWOT. The future operational environment is also strongly tied to security issues,

so examining it would have required the use of material of a different security classification. On the other hand, using only unclassified doctrinal publications will keep this work available for unlimited distribution. A number of US institutions have also worked on the issues discussed.

Applying the definitions listed here to GLIBs will obviously make the accuracy of the final product more reliable. And, because of the limited time available and size of this work, this approach allowed a better focus on answering the primary question. However, additional factors should be considered. The most important is the need for additional force protection, especially protection for personnel.

FM 3-0, *Operations*, speculates on how adversaries might operate, suggesting that they will “conduct force-oriented operations [and] inflict unacceptable casualties” (FM 3-0 2001, 1-29). It is assumed adversaries will “use terrorist tactics and other attacks to erode . . . alliance or coalition cohesion and the will to fight” (FM 3-0 2001, 1-29). While the number of casualties suffered directly affects the US national will to wage war, the same is applicable to all GWOT coalition partners, especially in regard to smaller countries. The ability of terrorists to inflict casualties is obviously limited to some degree, so the number (more precisely, the percentage) of casualties suffered to date by the US military, to a certain degree, is acceptable for the Nation. On the other hand, the same number of casualties inflicted on GLIBs or national contingents of smaller allied nations would be significant. Such a catastrophe would undermine the specific nation’s will to fight, and would affect other, smaller nations as well. This short analysis leads to the conclusion that inflicting larger casualties on particular national contingents, rather than

simply on all coalition troops in the theater, must be considered among the terrorists' most dangerous courses of action.

Obviously, weapons, equipment, and training are all directly connected to the protection units can provide themselves. However, focus and type of training can be easily redirected by commanders as circumstances require. Fielding and adopting new weapons and equipment, on the other hand, requires many more resources, including time, and is characterized by less flexibility. It is even more complicated once troops deploy into a theater of operations outside the country. In this respect, anticipating units' materiel requirements well in advance is of the greatest importance.

Lessons Learned

Several factors played roles in deciding which lessons learned to use for this research. As mentioned, the focus was on identifying the experiences of similar units in similar operations, specifically GLIBs, which are organized similarly to US light infantry battalions and which are equipped mainly, but not completely, with US equipment and armed with Soviet-designed weapons, with the exception of 60-millimeter mortars. Obviously, using lessons learned by US troops, especially in Iraq and Afghanistan, will be highly relevant and useful.

Initially, the thought was to look into current experiences of the Russian Federation military in urban warfare in Chechnya because Russian forces used the same weapons, but as other current research indicates, Russian forces still maintain a cult of "mass"; that is, massing forces instead of massing effects. As a small country, with a different culture and social thinking, Georgia cannot accept "massive use of force, massive collateral damage, and an acceptance of massive casualties" (Smith 1991, 1). For

this reason, Russian urban experience, while valuable, is not applicable to this work. On the other hand, the Chechyan example provides a visible model of the possible urban threat and useful information about the application of Soviet-produced weapons. For these reasons, lessons learned from Chechnya will be used when addressing specific issues.

Weapons

To examine requirements for additional or subsidiary weapons systems for GLIBs, accuracy, lethality, limited-visibility capabilities, firepower, and weight were used as evaluation criteria. The lack of accuracy of Soviet-produced firearms and the famous rocket-propelled grenade launcher (RPGL) is well known. This work analyzes whether or not the weapon's accuracy and current armament will be efficient for most future missions and, if not, what an alternative measure would be to improve it. Analysis examines the lethality of weapons systems and the impact the ammunition round has on a target. A limited-visibility capability is another requirement determined by the contemporary operational environment. For light infantry units to be successful, weapons systems must allow for effective actions during limited visibility--the most favorable visibility condition for dismounted soldiers. In addition to sufficient quality, a sufficient number of weapons is also required to achieve desired effects. Firepower of current and alternate weapons is examined and compared to the minimum requirements. The last, but equally important, criteria in regard to weapons is weight. Weapons will be of no use if they are too heavy for the light infantry soldier to carry around the battlefield. Throughout this thesis, these five criteria serve as a framework for the analysis of weapons systems.

Equipment

The variety of equipment and modifications that GLIBs can use encompass myriad possibilities and, obviously, all cannot be discussed in one work. Instead, the intent is to identify any critical shortfalls in equipment or quality and recommend possible solutions to minimize or eliminate them. Analysis also focuses on critical equipment needed for all type of missions GLIBs will most probably face in the foreseeable future. For this reason, equipment specific to a particular geographic area or climate is not discussed.

The most critical requirement for equipment in a future operational environment is protection. As future adversaries can be expected to “use modernized intelligence, surveillance, and reconnaissance (ISR) assets and weapons of mass destruction (WMD) to conduct sophisticated ambushes,” the need to be prepared to counter these ambushes is obvious (FM 3-0 2001, 11-29). GLIBs are trained in and continue to train in counter-ambush drills. However, they have no body armor or any kind of WMD protective equipment. While obvious, the need remains unaddressed in practice. Of course, such equipment could be given to battalions shortly before deployment or once they are in theater. However, the effectiveness of their use should be questioned, as it takes time to maximize their use through repetitive and realistic training.

Another effective countermeasure against the threat is early detection through effective intelligence. In an environment of dispersed asymmetric threat, units must operate within larger areas, which increases the importance of small unit level intelligence. Intelligence collection can be increased by different ways, mainly through additional training or equipment or both. Needs for additional training in this respect will

be discussed further. With respect to equipment, what organic reconnaissance assets GLIBs have, what capabilities they provide, and how sufficient they are to support reconnaissance and surveillance necessary for mission accomplishment and force protection is examined. Last, the absence of any organic WMD reconnaissance equipment is addressed to determine its operational effects.

Specific characteristics of the urban environment and the complexity of urban operations create additional sets of requirements for command and control (C2) and special equipment. Together with protection and intelligence, these requirements are used as evaluation criteria for the GLIB's equipment.

Training

Training, the most important aspect researched in this work, is discussed only after a discussion of weapons and equipment because preparation for future operations must incorporate any additional or substantial weapons and equipment allocated to the unit. In addition to the logistics allocation, the fielding of weapons and equipment requires time for integration through realistic training.

The following skill sets and capabilities constitute further requirements to provide niche capabilities for urban operations in GWOT to GLIBs in addition to infantry combat skills--combined arms capabilities; multinational training; ability for operations under limited visibility; special marksmanship considerations; ability for decentralized execution; and media skills. These requirements will serve as a framework for evaluating GLIB training. Because of its complexity and importance, the capability for decentralized execution will be further subdivided into discussions of leadership, medical, call for fire, pathfinder, and demolition capabilities.

The thesis focuses on challenges of training that can be addressed at battalion level. For example, FM 22-100, *Army Leadership*, classifies skill sets required for leaders as interpersonal, conceptual, technical, and tactical (2000, 4-2). Improving training in development of interpersonal and conceptual skills, although extremely important, requires institutional solutions. For this reason, the need for improving these skills is identified, but only technical and tactical skills are discussed in detail.

Finally, the purpose of this research was to simply identify additional weapons, equipment, or training GLIBs need in GWOT. This analysis is not intended to identify how to integrate these weapons, equipment, or training into unit preparation or employment.

CHAPTER 4

ANALYSIS

Old rules no longer apply. It is not business as usual. This state of War requires us to challenge old paradigms, to be flexible and adaptable to face a cunning and devious enemy. (Infantry 2004)

General Peter J. Schoomaker, Chief of Staff of US Army.

SRQ1. What Are the Key Capabilities a Light Infantry Battalion Must Have in Order to Conduct Urban Operations?

TRQ1.1. What Are the Most Critical Requirements in Regard to Weapons?

No ready list of the most critical requirements toward weapons in UO is provided in any doctrinal publication. To determine such requirements, FM 3-06, *Urban Operations* (2003), and FM 3-06.11, *Combined Arms Operations in Urban Terrain* (2002), were consulted. The most critical requirements were translated into the critical requirements toward the weapons. Accuracy, lethality, limited-visibility capabilities, firepower, and weight are discussed.

Accuracy

Several reasons exist for considering accuracy in UO, including prevention of collateral damage and fratricide; short target exposure time; maintaining operations tempo; and reducing ammunition consumption. FM 3-06.11 says, “One of the most significant issues of UO is collateral damage” (2002, A-2, 3-8). Because of the well known reluctance of western armies to cause collateral damage, “threats may operate in areas containing civilians and essential facilities to restrict the Army’s use of massed or

nonprecision firepower.” This consideration is not limited to indirect fire support only: “Threat forces may [also] attempt to gain cover by using the urban inhabitants as human shields” (3-8). The need for precise, accurate fires to prevent collateral damage is present with any weapon at any level of military operations in an urban environment.

Avoiding fratricide is another reason for ensuring accurate fires. Even in the absence of a civilian population, the close proximity of friendly and enemy forces make accurate fires necessary because the threat might “hug” friendly troops “to inhibit friendly commanders from employing some weapons systems and munitions for fear of fratricide” (FM 3-06 2003, 3-4).

Urban terrain proves cover and concealment, so there is usually short target exposure time for “firing systems to act rapidly on targeting data” (FM 3-06 2003, 5-21). The ability of forces to destroy targets in a timely and accurately manner will increase operations tempo, and have second- and third-order effects, such as reducing the threat to friendly forces and reducing ammunition consumption. The last is especially important in urban offensive and defensive operations where “ammunition consumption rates have been five to ten times greater than operations in other environments” (FM 3-06 2003, 9-8).

L lethality

The lethality of weapons is another consideration closely tied to the risk of collateral damage and fratricide. Studies indicate that urban combat mostly occurs at close range, and according to FM 3-06.11, “Few personnel targets [are] visible beyond 50 meters, and engagements usually occur at 35 meters or less” (7-1). For small arms, the “maximum penetration occurs at 200 meters. At ranges less than 25 meters, penetration is

greatly reduced” (7-3). For light and medium recoilless weapons, penetration is also limited. Because of the shaped-charge of the warhead, they normally “do not neutralize enemy soldiers behind walls unless they are located directly in line with the point of impact” (7-9). Battalion mortar high explosive (HE) rounds also have limited impact on concrete or brick walls. While flame weapons are extremely effective in UO, they also introduce the danger of fires, which “can cause more damage to the urban area than any other factor” (7-40). In addition, flame weapons increase risks to friendly soldiers, because the weapons themselves might explode or burn the user.

Limited-Visibility Capabilities

Limited-visibility capabilities are another critical requirement toward the use of weapons in UO. Periods of limited visibility that “favor surprise, infiltration, detailed reconnaissance, attacks across open areas, seizure of defended strong points, and reduction of defended obstacles” are the preferred times for infantry to conduct operations (FM 3-06.11 2002, 2-12). Limited-visibility capabilities allow infantry units to dominate the night, while the absence of such a capability puts them in an unfavorable position. As potential threats acquire more sophisticated weapons and technology, night vision devices and TWSs become a must to adequately counter such threats.

Firepower

Dispersed and noncontiguous battlefields bring the requirement of increased firepower to them. Dispersion of units as well as the partial isolation caused by urban cover and concealment disperses firepower as well, creating shortfalls in fire support of small units. With the limited weight a light infantry soldier can carry on the battlefield,

firepower cannot be increased merely by increasing the quantity of weapons. While increasing the quantity of weapons is always a possibility, doing so must be avoided. An increase in effectiveness is more desirable, wherever possible. Qualitative solutions include increase of accuracy, lethality, and limited-visibility capabilities of weapons systems and require a complex approach.

Weight

Weight is a consideration, not only with weapons and ammunition, but with the entire equipment infantry soldiers carry on the battlefield. While a soldier's load is a consideration in any environment, it is an especially "crucial concern for leaders at all levels . . . during UO, where the demands of physical and mental stress are combined with the need to carry additional ammunition and water" (FM 3-06.11 2002, 13-8). In this regard, an optimum balance must be found between sufficient weapons systems and necessary equipment.

TRQ1.2. What Are the Most Critical Requirements in Regard to Equipment?

Critical requirements in regard to equipment should be looked on in the same way as described in "urban" FMs. Such requirements are mainly determined by the Army's vision of the future threat and battlefield, taking into account lessons learned from recent UO. These requirements include protection; C2 (including identification, friend or foe [IFF]); observation and surveillance; and special equipment.

Protection

Protection equipment is the most important requirement for UO. Protective equipment is needed throughout the preparation, deployment, and redeployment of units.

The need for protection ranges from merely mechanical to ballistic threats and threat of WMD. A number of things determine the critical need for this equipment in UO. In addition to the increased direct enemy threat, they include training requirements, higher risk of fratricide, unique terrain considerations, and the increased risk of WMD and toxic material.

An increased direct enemy threat toward individual soldiers is mainly caused by the advantages an urban environment provides to threat forces to achieve their goals. Three major factors apply. First, the nature of the last urban warfare shows that threat tactics are increasingly oriented on force, rather than mission. When the threat attempts to gain advantage by “capitalizing on a perceived weakness of many Western nations: the inability to endure continuous losses . . . for which they are psychologically unprepared,” it puts individual soldiers under higher risk (FM 3-06 2003, 3-5). Second, in an urban environment, a number of factors allow the enemy to be more effective in achieving surprise: “Both the physical terrain and the urban population provide threat cover and concealment.” The number of attacks will also increase, and troops will be unprepared. Third, the “threat can then initiate offensive operations against Army forces from close range and where rules of engagement (ROE) will hamper applying combat power” (5-19). For this reason, infantry units must be able to retreat with limited or no fire support.

Training safety requirements provide another reason for needing protective equipment. By its very nature, even the training for UO requires soldiers “to wear earplugs, protective vests, and protective eyewear in order to protect themselves from noise and debris” (TC 90-1 2002, 1-11). Protective equipment should be integrated into unit preparation, as an unavoidable prerequisite.

The higher risk of fratricide is another consideration regarding protective equipment, especially for light infantry forces that “are more subject to fratricide related casualties from friendly direct and indirect fire” (FM 3-06.11 2002, C-2). Fratricide can be avoided by using proper protective equipment to prohibit friendly grenade fragments and rounds from penetrating inner walls during room clearing, debris from friendly indirect fire, and ricochets.

Unique terrain considerations, such as confined spaces, must also be considered. When firing a light or medium recoilless weapon from a room, “all personnel in the room should wear helmets, body armor, ballistic eye protection, and earplugs” (FM 3-06.11 2002, 7-13). Other considerations are hard surfaces, altitude differences, and the presence of manmade objects such as broken glass, all of which can significantly hinder movement on the battlefield. “Protective equipment such as knee and elbow pads, heavy gloves, and ballistic eyewear will significantly increase the mobility of Infantrymen in urban combat” (FM 3-06.11 2002, 1-19).

There is an increased risk of WMD and toxic material in future urban operations compared to past operations. Other environmental factors also present challenges. “A chief asymmetric means of engaging the national power of the US is to employ [WMD] against the US or its allies” (FM 3-06 2003, 3-2). FM 3-06.11 warns that a potential threat “may employ [WMD] or release toxic industrial materials (TIM),” so equipping all friendly units with means of WMD protection becomes an obvious requirement (F-1).

Command and Control

In UO, command and control also faces unique challenges that require mainly operational and tactical solutions but provide specific requirements toward C2 equipment

as well. The main considerations for C2 equipment are unit dispersion, characteristics of urban environment, and higher risk of fratricide.

Unit dispersion makes the urban fight a small unit fight. As a general rule, “urban physical morphology fragment urban warfare into conflict between units usually of squad or platoon size, with generally insufficient space for the deployment and maneuvering of larger units” (FM 3-06.11 2002, H-9). The loss of direct sight between small unit leaders brings up the need for even more communications equipment to facilitate effective C2.

The characteristics of the urban environment include “structures, materials, densities, and configurations (such as urban canyons) and power constraints associated with man-portable radios [that] significantly degrade . . . [frequency modulation] communications” (FM 3-06 2003, 5-30). Problems are most significant at the tactical level, where the frequency modulation band is the main means of radio communications.

There is a higher risk of fratricide in the urban environment “because of the dense complex terrain, the close proximity of the urban population, and the possible difficulty in distinguishing friend from foe” represent a distinct set of challenges to C2 (FM 3-06 2003, 4-3). FM 3-06 lists combat identification failure as the first possible cause for fratricide in UO (4-5). One way to address this challenge is to use a specific group of IFF equipment. For example, the “use of thermal recognition signals and markers can help decrease the possibility of fratricide” (FM 3-06.11 2002, 5-16).

Observation and Surveillance Equipment

Observation and the use of surveillance equipment as part of intelligence gathering might be the most critical actions in urban environments, especially in

defensive and offensive operations. The main factors that make urban reconnaissance and surveillance more challenging are terrain, visibility, and threat capabilities.

By its nature, urban terrain presents a higher density of cover and concealment, thus increasing dead space for observation. A partial solution to this problem is to place observers at higher altitudes. But, still, “even observers in good above-ground positions are often limited in their ability to see much of what is occurring” (FM 3-06.11 2002, 1-19). Other solutions include increasing the number of observers and employing aerial observers. While aerial observation is preferred, when permitted by METTT-C factors, it will obviously not be available to a unit at all times. Increasing the number of observers, on the other hand, will require an increased number of observation devices. Units must be equipped and trained, in this regard, before deployment.

The same is relevant to WMD surveillance. More WMD detection equipment is needed at lower unit levels. In urban areas, “the intervening structures and the effects of urban microclimates complicate the ability to detect and identify radiological, chemical, or biological attacks from a standoff distance” (FM 3-06 2003, 3-2). For this reason, doctrine suggests that “after an NBC attack, companies should dispatch their detection and survey teams. Detection in urban areas is complicated by the containing nature of buildings” (FM 3-06.11 2002, F-2). In other words, there is an increased need for more decentralized WMD detection capabilities. Companies, and possibly even platoons, must be equipped with portable WMD-detection equipment that, preferably, does not need specially trained or assigned personnel. Modern technology already provides such a possibility (Our Army at War 2004, 110).

Visibility is another challenge for observation and surveillance equipment during urban operations. Dust, smoke, and fire are added to the limited-visibility conditions normally associated with a battlefield; therefore, the use of limited-visibility devices, such as night observation devices, must be planned ahead of time. It is worth noting that in an urban environment no single solution is all-inclusive. While illumination rounds are useful, they require time to adjust and have only limited duration. “Tall buildings may also mask the effects of illumination rounds,” and they are of little or no use inside buildings (FM 3-06 2003, 5-22). While night vision devices (NVDs) are more useful, they depend on availability of ambient light and might not always be reliable inside buildings. Also, their “effectiveness is impaired by rain, fog, sleet, snow, smoke, and other reflective matter” (FM 3-06.11 2002, B-4). “Thermal imagery devices . . . are excellent for observation during limited visibility,” but their inability to observe through window glass and their heavier weight are significant considerations (FM 3-06.11 2003, 5-15).

Threat capabilities, infrared detection for example, significantly impair friendly options to use limited visibility devices. In Chechnya, “Russian infrared night vision devices highlighted their users when viewed through the passive night vision goggles used by the rebels” (Oliker, 2001, 16). This consideration is especially relevant to GLIBs, as they might counter the terrorist threat in the Caucasus region where such technology and tactics are already widely used.

Special Equipment

The need for special equipment is dictated by the nature of the urban environment itself. While well trained infantry units can conduct UO with standard equipment, “failure

to equip them with the right types and quantities of munitions and special equipment will make mission success more difficult and costly” (FM 3-06 2003, 4-4). FM 3-06.11 provides a list of urban special equipment that, while not all-inclusive, includes such equipment as “grappling hooks, rope, snap links, collapsible pole ladders, rope ladders, poleless litters, construction material, axes, sledge hammers, pry bars, and sandbags” (1-19). This equipment is mainly intended to increase troop mobility, facilitate the retrieval of casualties, and help with evacuations.

TRQ1.3. What Are the Most Critical Requirements in Regard to Training Skills?

Before discussing light infantry training, it would be useful to determine where it stands in regard to preparing units for UO. First, the role of infantry should be clarified. While urban operations require a combined approach to be successful, it is important to notice that “all UO put a premium on well-trained, dismounted infantry units” (FM 3-06 2003, 4-3). This fact by itself places emphasis on the proper training for light infantry units. Second, while the importance of properly arming and equipping forces cannot be simplified, it must be kept in mind that “competent leaders and well-trained and disciplined soldiers will remain the decisive means for the Army to succeed in this complex, multidimensional, and noncontiguous urban environment” (FM 3-06 2003, 1-10). Proper training is the key to success in UO. While fielding new weapons and equipment, it is always significant to balance “getting the best capabilities into the hands of soldiers against the risks of incomplete training and integration into the receiving unit’s SOPs” (Fontenot, Degen, Tohn 2004, 59). It is proficient soldiers, not equipment, who win the war.

Infantry Combat Skills

Special requirements for urban operations during unit training include combined arms capabilities, multinational training, operations under limited visibility, special marksmanship considerations, decentralized execution, and media skills. However, the ability of the infantry to fight and win engagements remains the top priority. No matter what the mission throughout the full spectrum of operations, “units must always be prepared to conduct close combat as part of UO” (FM 3-06.11 2002, 1-10). Infantry combat skills are the most valuable skills the military can bring to any operation. Infantry units might be tasked with a variety of missions that do not always include combat, especially in support operations and stability operations. Still, “even during normally less violent stability operations, such as peacekeeping, combat can occur in cities” (FM 3-06.11 2002, 1-8). Based on recent experience, there is no doubt about who needs combat training. On the noncontiguous, nonlinear battlefield there are no units under less threat than others. In some situations the threat “will seek to target support areas, small groups, leaders and their headquarters, and individual soldiers” (FM 3-06 2003, 3-11). Combat support and combat service support units will most probably face the same fight as regular maneuver units do. In other words, UO will be conducted “in an environment where it is hard to define a front line and where the enemy can repeatedly emerge in the rear. All soldiers will be fighters, and force and resource protection will be physically and psychologically draining” (Peters 1996, 43; FM 3-06 2003, 9-1).

Combined Arms Capabilities

Combined arms capabilities are critical in UO. The “first and most fundamental lesson learned from recent operations in urban areas is the value of the fully integrated

combined arms team” (FM 3-06.11 2002, C-1). Therefore, combined arms capabilities surely deserve special attention. Given their importance, most of the relative questions of this research were in regard to the importance of combined arms warfare for light infantry forces and the possible level for combined arms integration.

Regarding the importance of combined arms capabilities, it must be noted up front that infantry will be included in all combined arms organizations, which might or might not include other branches and services. “Effective combined arms task organization ensures that forces are task organized with infantry--the essential building block for all organizations conducting UO” (FM 3-06 2003, 5-19). Light infantry will need armored and mechanized forces to compensate for the lack of protection and firepower. “Only together can these forces accomplish their mission with minimal casualties, while avoiding unnecessary collateral damage.” (FM 3-06.11 2002, C-1)

Combined arms integration will take place on very low levels as well. Because a combined capability is needed for successful mission accomplishment and urban areas do not usually provide much maneuver space, units will be forced to integrate at much lower levels. Doctrinally, “UO provide one of the few situations where infantry and armor elements may be effectively task-organized below platoon levels” (FM 3-06.11 2002, 4-30). Another reason to form combined arms teams at platoon and squad levels is that “decentralized armor support greatly increases a small Infantry unit’s combat power” (FM 3-06.11 2002, C-4).

Multinational Training

Multinational training is another feature presented by UO, especially in GWOT. Currently these are all prerequisites to assuming that any GWOT will most probably be

coalition-led operations. While national contingents might conduct regional operations in the scope of the war, the ability to conduct multinational operations remains a requirement. FM 100-8, *The Army in Multinational Operations*, says, “Forces must be able to effectively exchange commands, ideas, and information if they are to operate successfully together” (1997, 1-7). Along with political and logistical considerations, FM 100-8 identifies two main doctrinal military considerations: differences in language and communications and differences in procedures (1-7). For Georgian-US relations, communications and knowledge of partner procedures is of a lesser concern, as GLIBs are adopting the US doctrinal approach and are using US equipment. Language problems deserve the most attention.

Marksmanship

Marksman training deserves special attention. In any combat operation, success or failure depends “on the ability of the individual soldier to place accurate fire on the enemy with the least exposure to return fire” (FM 3-06.11 2002, 3-47). While the soldier’s ability to engage targets with weapons systems is decisive in the outcome of combat, a number of factors in urban environments affect this ability, including engagement ranges, target identification, and engagement time.

Engagement ranges. Engagement ranges are generally much closer in urban environments than in any other environment, mainly because of the number of manmade obstacles and dust and smoke present on the battlefield. FM 3-06.11 says, “Studies and historical analyses have shown that only 5 percent of all targets are more than 100 meters away” (2002, 1-18).

Target identification. Target identification is another significant factor that puts great constraint on the shooter, mainly because of the increased presence of civilians on the battlefield. This problem is especially significant because at short distances targets have a greater advantage because they can attack friendly troops. Timely and correct target identification is even more important during room clearing. According to FM 3-06.11, “Too slow a shot at an enemy, too fast a shot at a noncombatant, or inaccurate shots can all be disastrous for the clearing team” (2002, 3-35).

Engagement time. Engagement time is also a significant consideration because engagement time is short and “enemy personnel present only fleeting targets” (FM 3-06.11 2002, 1-18). Also, a soldier’s ability to quickly engage a target reduces his own exposure time to potential return fire. Suppression of friendly units is another factor that can significantly reduce engagement time: “Enemy-held buildings or structures are normally covered by fire and often cannot be engaged with deliberate, well-aimed shots” (FM 3-06.11 2002, 7-1).

The best solution to address these challenges, especially in precision clearing, is reflexive shooting, because “proper weapon ready technique, stance, aiming, shot placement, and trigger manipulations constitute reflexive shooting” (3-35). All team members must be trained for this technique and used it during precision clearing.

Decentralized Execution

Having the ability for decentralized execution is another huge requirement that an urban environment places on training. Most UO require small-unit fighting, so small units must have a certain level of independent abilities not normally required. Critical abilities

derived from doctrinal publications include leadership, call for fire, medical, sharpshooters, pathfinder, and demolition capabilities.

Leadership. Leadership is the most critical challenge in this regard. In UO, where decentralized execution is an unarguable must, “effective vertical and horizontal communications are critical. Leaders must trust their subordinates’ initiative and skill, which can only occur through training” (FM 3-06.11 2002, 1-13). Effective leadership at small unit levels facilitates flexibility, initiative, and tempo, and allows for successful exploitation of arising opportunities. On the other hand, a lack of proficient junior leaders, as in Chechnya, “can become costly in an urban environment” (Ackerman 2000).

FM 22-100, *Army Leadership*, recognizes four skill sets leaders should develop to be effective: interpersonal, conceptual, technical, and tactical. The FM says, “Requirements for technical and tactical skill sets . . . apply to every soldier, including leaders. Development of interpersonal and conceptual skills deserves particular attention. Leader development is based on training and education and includes training (schooling), operational assignments, and self-development” (FM 22-100 1999, 5-14).

Interpersonal skills in UO must influence friendly units and, increasingly, the civilian population and nonmilitary organizations as well. On one hand, “success of UO often depends on establishing a successful working relationship with all groups operating in the urban area” (FM 3-06 2003, 8-13). On the other hand, most of this interaction takes place at the small unit level where developing interpersonal skills “require the commander, his subordinate leaders, and other soldiers to conduct some form of negotiations almost daily” (FM 3-06.11 2002, 14-6).

Conceptual skills have special importance in UO. Leaders at all levels must be able to conceptualize different aspects of complex urban environment. The outcome of the mission directly depends on the ability of leaders to recognize situational changes and promptly adopt solutions. FM 3-06 says, “Adaptability is critical to urban stability operations and support operations because these operations relentlessly present complex challenges to commanders for which no prescribed solutions exist” (2002, 8-12). Leaders’ conceptual skills are nonnegotiable prerequisites for this adaptability.

Call for Fire. Call for fire capability in UO is part of the requirement for decentralized execution. To use even mortar fires, commanders must consider positioning forward observers (FOs) “where they can get the maximum observation so target acquisition and adjustments in fire can best be accomplished” (FM 3-06.11, 2002, 12-2). In an urban environment, with units from squad to platoon levels spread out, the highest level unit to be reasonably expected to have “maximum observation” is the platoon. Units might need support from national or coalition fighters and attack aircraft as well. In this case, they “must exercise firm control and direct their firing. Failure to do so may lead to the pilot becoming disoriented and engaging friend and foe alike” (FM 3-06.11 2002, 13-2). FOs at the platoon level must be able to call for and adjust for close air support (CAS) as well as mortar and field artillery fires. Having FOs at platoon and company headquarters helps facilitate effective indirect fire support.

Medical Requirements. Increased medical capability requirements are mainly determined by higher casualty rates, availability of medical personnel, and the potential of prolonged evacuation times. Historically, in the urban environment there are “three to six times greater casualty rates than [in] any other type environment” (FM 3-06 2003, 9-

17). In addition, the nature of UO makes access to casualties more difficult. Combined with a limited number of combat medics, these factors “may limit the urban casualty’s initial treatment administered by nonmedical personnel or to self-treatment measures” (FM 3-06 2003, 9-21). Even if access to casualties is not a problem, a high number of personnel requiring medical treatment can overwhelm the ability of the combat medic attached to a rifle platoon. The solution to the problem is to “strive to meet or exceed Army standards for the number of combat lifesavers required for their specific unit” (FM 3-06 2003, 9-21). For light infantry units this means training at least one CLS per fire team; i.e., eight per rifle platoon. Another medical consideration is that “the increased potential for delayed evacuation during UO mandates that Army combat medics be skilled in prolonged casualty care” (FM 3-06 2003, 9-21). Medical personnel should also be prepared to sustain casualties for prolonged periods of time when evacuation is delayed.

Sharpshooters. The sharpshooter concept is a ready solution available in response to weaponeering problems presented by the urban experience. This problem, simply formulated, is that the “value of employing snipers and the threat posted by enemy snipers” is increasing while the low number of snipers available to friendly units is increasing (FM 3-06.11 2002, 2-35). For numerous tasks that require accurate engagement, regular infantry battalions have four to nine snipers. This number is simply not enough to support all the needs of a parent unit. Merely increasing the number of snipers would create another set of problems, however, and as a general rule not feasible for regular infantry units. The sharpshooter concept would solve this problem by providing to small units organic capabilities to accomplish some of these tasks, allowing

snipers to concentrate on higher priorities. In essence, “having a sharpshooter in a squad is a matter of selecting the best shot and giving him a rifle with a telescopic sight” (Harris 1999, 23). Having sharpshooters would greatly improve a squad’s ability to accurately engage targets at close and medium distances and enhance its ability to collect intelligence. Higher training and better weapons system would allow sharpshooters to “locate and engage point targets not apparent to the shooters with iron sights or the close combat optics” and provide limited capabilities against enemy snipers. Generally, while they do not require significant resources, sharpshooters effectively increase a small unit’s lethality, mobility, and survivability.

Pathfinder. The pathfinder skill requirement for light infantry units in UO is most closely tied to the medical evacuation of a potentially high number of casualties and the need to replace them quickly with new troops. Aeromedical evacuation, although not always a feasible option, is the preferred method (FM 3-06.11 2002, 13-19). Helicopters can move troops forward in urban environments when roads are few or overloaded. It is also important to note that “employment of Pathfinders or ground security elements is invaluable in the preparation of the LZ [landing zone]” (FM 3-06.11 2002, 9-19). The urban environment does not present significant technical differences in selecting LZ/PZ, so qualified pathfinders will not need additional training. However, units need to have pathfinder-qualified personnel to be able to effectively use helicopter support.

Demolition Capabilities. A demolition employment capability is another critical tool to enable decentralized execution by providing timely and flexible support to mobility, countermobility, and survivability. FM 3-06.11 says, “Combat in urban areas requires the extensive use of demolitions, which requires all soldiers, not only engineers,

to be trained in demolition employment” (2002, 7-39). There are a number of reasons why infantrymen will need to prepare mouseholes, breach walls, and rubble buildings, and to emplace command-detonated mines, the foremost reasons include supplementing fortification efforts, providing mobility and communications, and economizing the use of engineer personnel. There are alternative ways for demolitions. To facilitate wall breaching, for example, a mechanical or ballistic breach might be used. However, according to FM 3-06-11, “explosive breaching is often the fastest and most combat-effective method” (2002, 8-19). Demolitions employment might be the only way of forcible entry for room clearing, which makes it desirable to have at least one soldier with this skill at the fire team level--the unit conducting room clearing.

Media Skills

The increased presence of the media on the battlefield is an unavoidable factor in future operations. Currently, “there are few operations [around the world] in which the media are not present” (FM 3-21.21 2003, 8-18). Media have even “more access to urban operations” than to any other operational environment because of the developed infrastructure (FM 3-06 2003, 2-21). This increased presence guarantees near-real time coverage of operations and “can have a direct impact on mission success” (FM 3-61.1 2000, 1-1). Media presence in the operations area can increase the risk of disruption of operations and endanger mission accomplishment. On the other hand, however, when successfully engaged, “media can serve as a force multiplier” (FM 3-06.11 2002, 1-26).

A passive attitude opens opportunities to different threats “to influence global public opinion and shape decisionmaker perceptions” (FM 3-13 2003, 1-5). The Russian military’s lack of managing media allowed Chechen rebels to be “open to [the] press . . .

and generally making themselves available to domestic and foreign journalists” to win information operations during the war from 1994 to 1996 (Oliker, 2001, 22). On the contrary, the “strict system of accreditation and escorts” implemented by the Russian government from 1999 to 2000 paid off, at least initially (Oliker 2001, 63). Coalition operations in Bosnia (1995) and Iraq (2003) also provide examples of how an effective media facilitation, through open relations and cooperation, can support positive public opinion and mission accomplishment. Furthermore, with the rapid development of the global information environment, media relations are no longer carried out by only commanders and public affairs personnel; now “a single soldier may have significant strategic implications” (FM 3-06.11 2002, 1-10).

These circumstances dictate that “Army forces must be prepared for contact with the media” (FM 3-07 2003, 1-18). This readiness itself will always be dependant on the conduct of the individual soldier and his ability to effectively interact with journalists and the media in general.

SRQ2. What Capabilities do Georgian Light Infantry Battalions Currently Possess?

TRQ2.1. How Effectively Do Weapons Under Current Table of Organization and Equipment Satisfy the Critical Capability Requirements?

Georgian Light Infantry Battalion Weapons

To analyze how weapons under current GLIB TOE satisfy critical capability requirements, it is first necessary to determine what weapons are available. These weapons are classed in three major categories: small firearms (sniper rifles, assault rifles, automatic rifles, machine guns, and under-barrel grenade launchers), antiarmor weapons, and mortars.

It must be noted in advance that “all of the weapons were manufactured in one of the former Soviet satellite nations” and include only Soviet model systems (Mehringer 2003b). Small firearms for GLIBs include Makarov 9-millimeter pistols (Ovalle 2003g); AK-47 (7.62 x 39-millimeter) assault rifles (Ovalle 2003a); RPK (7.62 x 39-millimeter) squad automatic rifles (Mehringer 2003a); PKM (7.62 x 54-millimeter) medium machineguns (Mehringer 2003a); Dragunov (7.62 x 54-millimeter) Sniper Rifles (Ovalle 2003g); and GP-25 (40-millimeter) under-barrel grenade launchers (Ovalle 2003g). Antiarmor weapons in GLIBs are RPG-7 RPGLs (Colvin 2003a). Battalions also have Yugoslavian 60-millimeter mortars and the Soviet block 82-millimeter mortars (Ovalle 2003i). The discussion of these weapons by categories follows the same criteria as used for examining the critical capability requirements of weapons.

Small Arms

Accuracy. The accuracy requirement for small arms in UO is partially compensated by short engagement ranges. Still, it is not totally eliminated and is one of the major concerns with small unit capabilities. None of the available sources examined in regard to GTEP training indicated the issue of training with close combat optics (CCO) or day optical scopes (DOSSs). Therefore, it is feasible to assume that GLIBs did not receive any, at least during GTEP training. However, the absence of such optics limits small units’ abilities to train and employ sharpshooters. This consideration is especially important, because units are equipped with Kalashnikov system rifles, which are not known for accuracy. Accuracy for SVD sniper rifles is not a concern, as sniper scopes are included in the standard weapon set. GP-30 under-barrel grenade launchers, which offer slightly increased accuracy through a more user-friendly aiming sight, are available on

the market. Still, procurement of modified grenade launchers for AK rifles is not reasonable before finally determining the weapons systems GLIBs will use in the near future.

Lethality. For small firearms lethality, penetration is the most important concern in close urban combat. For the 5.56-millimeter round, for example, “maximum penetration occurs at 200 meters. At ranges less than 25 meters, penetration is greatly reduced” (FM 3-06.11 2002, 7-3). Penetration can be slightly improved by using armor-piercing rounds. However, this solution has a number of side effects. These rounds cost significantly more, increase wear of the weapon, and have a higher probability of ricochet. Higher calibers are also affected at close ranges, but the 7.62-millimeter round is affected less . . . than the 5.56-mm [millimeter]” (FM 3-06.11 2002, 7-5). While caliber is important for higher lethality of rifles and machineguns, the lethality of under-barrel grenade launchers largely depends on the ammunition used. The VOG-25, the GP-25’s standard fragmentation grenade, and the VOG-25P bouncing fragmentation grenade are available in the antipersonnel role. An air burst at an average of 1.5 meters makes the bouncing grenade more lethal against personnel in open or uncovered fortified positions. The Russian Research and Production Center, “Pribor,” announced the development of a 40-millimeter “cumulative” round for the GP-25 and the GP-30 under-barrel grenade launchers, which is capable of piercing 60- to 70-millimeter of armor (Geibel 2002, 19). Such rounds would give rifle squads limited antiarmor capabilities against BTR and BMP fighting vehicles. This penetration is more than the side and back armor thickness of these fighting vehicles but would be dependant on the angle of impact. Interestingly enough, Pribor announced that the third new round would be thermobaric; that is, the

weapon might introduce thermobaric capabilities to light infantry units without changing its TOE (Geibel 2002, 19). This capability is significant as it “will provide a more effective and selective flame capability that is easier and safer to employ at all levels of tactical operations,” if required, without risk of uncontrolled fire in urban areas (FM 3-06.11 2002, 7-21). Political limitations in acquiring such ammunition, even after development, are obvious. However, it can probably be obtained from other countries that now produce Soviet weapons and ammunition.

Limited-visibility capabilities. Limited-visibility capabilities during GTEP training, according to the sources addressed, were restricted to “illuminated night attack” (Mehringer January 2003a). Illumination mortar rounds were used to illuminate the objective area during infantry training attacks. As a result, after the training cycle, with the standard TOE, GLIBs were able to “conduct company-size daylight and limited night operations” (Manjgaladze n.d., 39-45). Obviously, mortar illumination is not the most desirable method; night vision devices and sights offer myriad options to improve the limited-visibility capabilities of units. Along with this, night illumination is not an option when conducting reconnaissance and trying to maintain surprise before the attack--the most significant advantage night offers to light infantry forces. With small firearms, the need to improve GLIBs’ limited-visibility capabilities is axiomatic. It is not a matter of a need for better night vision or thermal devices, it is a matter of obvious need to have them. Requirements of light infantry weapons for limited-visibility capabilities are discussed in the first secondary research question in this chapter and are no different for GLIBs.

Firepower. Firepower of small arms in GLIBs is a debatable issue. The main argument is the caliber of assault rifles and automatic rifles. A higher caliber (7.62-millimeter versus the NATO 5.56-millimeter) means more weight per single round and a decreased quantity of ammunition per reasonable combat load per soldier. One position on the subject is that penetration (as previously discussed), coupled with a decreased threat of ricochet, is a reasonable argument for maintaining higher caliber firearms. Another position is that penetration is not a decisive factor, and a decreased combat load and a higher quantity of ammunition is a good reason to decrease the caliber of assault rifles and automatic rifles in light infantry units. The argument is that smaller caliber weapons can still penetrate common obstacles in the urban environment, such as interior walls, plaster, and furniture. They also make no significant difference in suppressing enemy, as “suppression is purely a function of belief that a weapon can do harm, so it does not really matter if you are firing a 5.56-millimeter or 7.62-millimeter as long as the enemy will take cover and not shoot back” (Owen 2004, 49). Meanwhile, urban experience shows the need for carrying increased numbers of ammunition to satisfy the need for self-sustainment of units over longer periods of time. In Mogadishu, Somalia, after the “first firefight in August, [troops] found that a normal basic load of ammunition was simply not enough [when] in contact with the enemy for more than nine hours” (Ferry 1994). The solution would be to carry extra ammunition, sometimes even in quantities equivalent to the basic load. In essence, this position suggests the importance of volume and duration of fires over lethality. Sniper rifles present another consideration regarding the firepower. However, this option involves changing the TOE, so it is not addressed in this discussion.

Weight. While 7.62-millimeter caliber rifles are a consideration because of their weight, penetration is still one of the most important factors to be considered in this regard. Soldiers' load weight is always particularly important for light infantry units, but past urban experience indicates that it cannot be the supreme factor in regard to weapons. For example, during the early 1990s, the US Army decided to replace M60 medium machineguns with M249 SAWs. In this case, reports from units returning from Somalia indicated that the M249 did not have all of the capabilities expected of a machine gun. Both the M249 and the M60 received high praise from soldiers, but for different reasons. The M249 was easier to carry in the urban environment but could not match the penetrating power or the psychological value of a 7.62-millimeter weapons system.

Antiarmor Weapons

Accuracy. The Accuracy of an RPG in urban areas in the antitank role, given its penetration abilities, is not a significant limitation. It has an effective aiming range of 500 meters against stationary targets and 300 meters against moving targets (TRADOC 1999, 1-11). However, it can attack tanks only from the flanks and rear and is not effective against frontal armor. This means infantry units will have to let tanks up to, and probably past, RPG positions, although it seems unreasonable to allow tanks to pass advance positions by more than 300 meters, which is aiming range against moving targets. While the accuracy of RPGs is not a significant limitation, it does not mean that it totally satisfies all the anti-tank capabilities with its accuracy, range, and lethality. “Fire-and-forget” antitank guided missiles (ATGMs) are a sound option to counter the armor threat but would require significant changes in TOE so are not discussed. An important

consideration for using ATGMs effectively in an urban environment is that a launch command unit cannot be wire-guided because of the characteristics of urban terrain.

Lethality. The war in Chechnya serves as the best demonstration of capabilities of this weapon against Soviet-type armor. Lightly armored vehicles, such as the BMP-2, were penetrated at all angles during this war (Karagosian, Coglianese 2004, 40-44). While penetration does not necessarily mean destruction, the fact still clearly demonstrates the effectiveness of RPGs against medium and light armor. Obviously, it will be more effective against lighter BTR armored personnel carriers. On the contrary, however, tanks proved survivable to frontal hits, and a single shot even to the flank or rear provided a low probability of significant damage. Large back-blast, high signature, and low practical rates of fire added limitations to RPGs in the antitank role. Chechens solved the problem “by engaging each target simultaneously with five or six antitank weapons” (Karagosian, Coglianese 2004, 40).

The same solution, of employing multiple shots, presents the most reasonable option for GLIBs to counter an armor threat in the UO, which will most probably consist of Soviet-type systems. However, depending only on RPGs as antitank weapons limits a unit’s ability to engage targets to only those tanks located inside the built-up area. While this option might prove effective in big cities, it cannot effectively address challenges of defeating armor around smaller built-up areas such as villages. Open space around infantry positions provides tanks the ability to engage friendly units without closing with them and without exposing their flanks. In such cases, RPGs will be obsolete. Combined arms task organization is a standard solution. However, the only tank and mechanized company was trained along with four infantry battalions under the GTEP program. This

one company, consisting of “nine T-72 main battle tanks and ten [BMP] armored personnel carriers” cannot effectively support all four GLIBs (VandenBossehe 2004). This problem brings the requirement to have antitank weapons with enough lethality to destroy tanks on longer engagement ranges than the tank’s main gun has. This extended kill range is needed to provide a safe standoff distance for friendly units. ATGM systems are the best solution for the longer lethal range requirement. An additional consideration for ATGM is the exposure time of the firer. Fire-and-forget systems, which lower the probability of destruction of the firer--by minimizing time--is a good way of conserving a light unit’s antiarmor firepower.

Limited-visibility capabilities. As for the small firearms, no material researched provided any evidence of limited-visibility capabilities for RPGs. Its importance is no less for antiarmor weapons, however, than for small firearms.

Firepower. Antitank firepower is a significant consideration for GLIBs, even in UO where infantry has the most advantage against armor units. Available material does not present exact information about the number of RPG-7 gunners in GLIBs. It is known, however, that a Soviet-type armor battalion consists of 31 tanks, and to defeat one tank Chechens had to fire at least 5 RPG rounds from the flanks and rear. It takes only simple math to calculate how effectively a GLIB could withstand one such battalion, even given the advantage of defense in UO. The GLIB should have at least nine RPGs per maneuver company that could fire a full combat set (six rounds) of RPG unimpeded and achieve hits to the flank or rear of the tank for each round fired. Clearly, this leaves virtually no theoretical chance of success even if the enemy is totally uncovered and not firing back. If using only RPGs, reality keeps this chance steadily at zero.

Using combined arms, engineer, or air support is a standard operational solution addressing this problem. Nevertheless, GLIBs would be even more capable if they had limited autonomous capabilities to counter the armor threat of at least its own size. Additional antitank units might be an optional solution. However, because of the limitations of this research, the feasibility of this option is not discussed. The possibility of augmenting antiarmor capabilities with GP-25 cumulative ammunition was previously discussed. Introducing cumulative ammunition for under-barrel grenade launchers would free other antiarmor weapons from engaging lighter armored vehicles and allow the concentration of heavier firepower against tanks. Another more effective way of solving this problem without amending TOE would be disposable, recoilless, antiarmor weapons. In this regard, however, additional weight is a consideration.

Weight. Carrying disposable recoilless, antiarmor weapons would increase soldiers' urban combat load, and they already "probably carry more than the recommended 48-pound fighting load during urban combat" (FM 3-06.11 2002, 13-9). In addition, these weapons will be necessary only in some METTT-C environments, so carrying extra antiarmor systems will not always be necessary. Therefore soldiers should be regularly trained in advance to employ these weapons and use them only when an armor threat exists. Individual training for using disposable, recoilless, antiarmor weapons is not complicated or time-consuming and can potentially pay great dividends. Using such weapons will provide additional antiarmor capabilities and flexibility in among units without reallocating personnel.

Mortars

Accuracy. GLIB mortars consist of Yugoslavian 60-millimeter company light mortars and 82-millimeter Soviet Block mortars. As a former Soviet satellite, Yugoslavia produced mostly Soviet-type weapons; the 60-millimeter mortar is an exception. As the Soviets did not have 60-millimeter mortars, the Yugoslavian 60-millimeter mortar is a copy of the US model. In this regard, virtually all the characteristics for the mortar are the same as for the US Army company mortars. Therefore, these characteristics are discussed in less detail. The main characteristics of the Soviet 82-millimeter mortar will be addressed as much as limited unclassified information available in English allows. Comparison with similar US 81-millimeter mortar and ammunition will be used, when necessary, to compensate for this information gap.

Due to a number of factors, such as low velocity and high trajectory, mortars' accuracy depends more on ammunition and weather factors than on merely the mechanical direction of the tube, based on geometric calculations. These factors are always present and their impact can never be eliminated. Instead, they must be managed. In this regard, two main ways of improving accuracy are to calculate firing data and to use precision guided mortar munitions (PGMM).

Currently, there is no PGMM available for mortars under 120-millimeter, so GLIBs obviously do not have this capability. Therefore, the only practical solution to increase the accuracy of mortar fires, with given a system and ammunition, is to increase the effectiveness of calculating firing data. It is interesting, however, that the material available about GTEP training only mentions planned "direct lay and direct alignment fire-support package" (Ovalle 2003i). One battalion commander requested additional

training for his mortar units in indirect fire (Ovalle 2003i). Other available sources do not identify if such training was conducted or not. This fact shows that indirect fires were not initially included in the training package, which leads to the reasonable assumption that GLIBs did not receive firing data processing equipment at all. This disadvantage leaves battalions with only mechanical or analog means for calculating fire direction, which greatly reduces the accuracy and responsiveness of mortar fires.

Lethality. Lethality of mortars in urban environments is significantly reduced by the cover urban terrain presents. FM 3-06.11 says, “The effect of a 60-mm mortar HE round that achieves a direct hit on a bunker or fighting position is equivalent to 1 or 2 pounds of [Trinitrotoluene] TNT” (2002, 7-28). While such a blast can damage fortified positions, it would not be enough to collapse a properly constructed bunker or to crater hard-surfaced roads. The effects of an 81-millimeter mortar are slightly higher. Its direct hit is equivalent to approximately two pounds of TNT and can penetrate roofs of light buildings (FM 3-06.11 2002, 7-28). An almost identical caliber provides the possibility of assuming that effects of GLIB mortars are virtually the same as those of the 81-millimeter mortar.

While a 120-millimeter mortar HE round has slightly better results against light structures, it does not perform well against reinforced concrete and cannot be regarded a significant advantage over a medium-caliber round (FM 7-90 1992, J-2). In addition, the purpose of using mortars in UO is to obscure, neutralize, suppress, or illuminate, not to destroy heavy structures (FM 7-90 1992, J-1). These factors suggest that the current lethality of GLIB mortar fires is satisfactory and does not require additional improvements.

Limited-visibility capabilities. Limited-visibility capabilities for mortars, as with all weapons mentioned, are limited to the mortar illumination. One mortar tube used for illumination rounds and another tube used for HE rounds was the way GLIBs were trained to conduct night fire. Available material does not address any limited-visibility device used by mortar units for training. Once again, the assumption is that GLIBs were not trained for it because they did not have other limited-visibility capabilities. However, depending totally on illumination rounds during limited visibility has a number of negative factors. In this case, target identification depends on the availability of illumination rounds, requires expenditure of this ammunition, and is time consuming. The total absence of limited-visibility devices in mortar weapons system is not an acceptable option and requires an immediate solution.

Firepower. The firepower of GLIB mortars is generally the same as that of a US Marine Corps rifle battalion. GLIB sources do not specify the number of tubes in each battalion. It is known, however, that there are two light mortars per mortar section in each rifle company and four medium mortars in each mortar platoon per battalion.

Weight. In light infantry units, weight is always a consideration. A 60-millimeter mortar weighs 46.5 pounds (FM 23-90 1990, 3-3). The weight of a medium mortar depends on the model, but it is more than three times as much (FM 23-90 1990, 4-4, 5-3). Still, the main consideration is the weight of the ammunition, not of the mortar. In GLIBs, transportation assets for mortars are limited. Being organized in a similar manner as US light infantry units, a “battalion mortar platoon is equipped with trucks and trailers, but the company’s 60-mm mortars are hand carried” (FM 7-90 1992, 1-7). Meanwhile, a

company “mortar section can fire 280 rounds of 60-mm mortar rounds in five minutes” (FM 7-90 1992, 8-3).

No technological solution is readily available to significantly decrease the weight of either mortar systems or ammunition in GLIBs without compromising capabilities. However, at the unit level, the ammunition’s weight can be decreased by decreasing the required quantity, through more accurate fires or the decreased need for certain types of ammunition, by partially substituting capabilities with other weapons or equipment. For example, there could be a more accurate means of fire direction and providing limited-visibility assets to decrease the need for illumination rounds.

TRQ2.2. How Effectively Does Equipment Under the Current Table of Organization and Equipment Satisfy Critical Capability Requirements?

GLIB equipment is rarely addressed in any detail in the available unclassified material. Units are trained for what they are issued, however, so following the training package will give a good idea about the equipment issued during the GTEP. Generally, GLIBs differ from Soviet-model trucks and weapons by being equipped with US military uniforms and field gear, including the complete boot-camp issue (Mehringer 2003b). The following paragraphs give an overview of protective, C2, observation and surveillance, and special equipment.

Protection

Kevlar helmets are the only protective gear mentioned in sources available in regard to GLIBs (Carter 2003). Sources do not identify any issue or training on flack jackets, body armor, or any kind of WMD protective gear. Kevlar helmets proved their effectiveness in UO in Somalia, Operation Enduring Freedom (OEF), and Operation Iraqi

Freedom (OIF), and it is to GLIBs' advantage to have them. On the other hand, the complete absence of other ballistic and WMD protective equipment, even for the training phase, is unacceptable.

Command and Control

GLIBs were issued Harris radio systems for communications gear. Both basic and advanced communications training was given on the radio systems and their utility (Ovalle 2003b). There is no indication, however, of training on cable communication equipment. Because of the sensitivity of the subject, specific characteristics of current communications equipment are not discussed in any open-source material and will not be discussed here. On the other hand, an analysis of available sources makes it clear that the C2 equipment issued to GLIBs was designated for warfare in non-urban environments, was limited to frequency modulation band radios, and did not include wire or digital communications equipment. General capabilities and additional requirements toward communications equipment in UO will be addressed in general. Another set of C2 equipment--thermal IFF devices--is not identified by any source and is not mentioned in regard to GTEP training. It would be feasible to assume that GLIBs currently do not possess this equipment.

Observation and Surveillance Equipment

Observation and surveillance equipment leaves even more room for assumptions. The main concerns in this area are the ability to equip higher number of observers, limited-visibility capabilities (in augmentation to the weapon night vision and thermal sights), and vulnerability to infrared (IR) identification.

The need for more observation and surveillance equipment is a nonnegotiable requirement in UO and must be considered in any unit's preparation for urban warfare. It is significant to remember, however, that GLIBs initially were not equipped for or trained to conduct UO. They were intended to "go after suspected terrorists who have infiltrated into the Pankisi Gorge area of the country" and were prepared to operate in such conditions (Mehringer 2003b). The probability of GLIBs being equipped with more observation and surveillance equipment than standard light infantry battalions, including NBC-detection devices, is unrealistic.

The limited-visibility capabilities requirement for observation devices is interdependent with the capabilities provided by a weapon's night vision and thermal sights. In contemporary battle, every soldier is an information collector, and it does not make a significant difference what assets he uses to acquire information. Training on any of this equipment, however, is not part of the training package discussed in GTEP material. Obviously, integrating night observation and thermal devices into training requires significant preliminary technical training. The absence of such training is an obvious indicator of the absence of such equipment at all. The conclusion in regard to observation and surveillance equipment, therefore, is the same as for weapons sights; they do not possess limited-visibility capabilities. Vulnerability to identification, such as by IR source detectors, is generally a significant consideration. On the other hand, a total absence of such equipment makes it worthy of future consideration.

Special Equipment

Special equipment is inherent to UO and, thus, a prerequisite for qualitative urban training. As GTEP included a three-week urban training package, it is certain that GLIBs

were issued special equipment for this purpose. No specific listing of this equipment is available in reference material. Determining this list, however, would be of limited use, as special equipment wears out fast and, most probably, will already have been replaced in GLIBs. Furthermore, special equipment is mission dependant and changes in accordance with the anticipated missions.

TRQ2.3. How Effectively Does Georgian Light Infantry Battalion Training Satisfy the Critical Capability Requirements?

Georgian Light Infantry Battalion Training Under Georgia Train and Equip Program

The training of GLIBs was conducted under the auspices of the US security assistance GTEP program. Before reviewing this training, it is important to mention GTEP's goal. The training of maneuver and combat support units, including mortars, medical, and communications platoons should also be discussed. The program's military goal was to "train the 560-man . . . Light Infantry Battalion . . . to conduct patrol base operations, ambush procedures, urban terrain operations, long-range patrols, platoon level raids, and daylight company-level attacks and night defensive operations" (Ovalle 2003d). The training cycle for each battalion included a 100-day training program executed by US training cadre. A common factor for all battalions was that for the beginning of a training cycle they had recently been created and had not received substantial infantry training, which meant that at the end of this 14-week cycle, GLIBs' training was primarily limited to the training received during the program itself (with the exception of the officer cadre, which had previous military education) (Mehringer 2003b).

A general review of GLIBs' training during the GTEP provides the basis for determining how effectively it satisfies critical capability requirements. GLIB training was focused "on light infantry operations with basic individual training in combat lifesaving, radio communication and land navigation" (Hjelmstad 2003).

The first four weeks of training consisted of four blocks of instructions in infantry tactics, land navigation, first aid, and fire and movement. Three line companies and the Headquarters and Support Company (HSC) were trained in a round-robin type format with one week per training block (Ovalle 2003a). It is important to note that all GLIB units, including the HSC, received rudimentary fighting skills during this period of instruction. After four weeks, HSC units were trained separately by their specialties.

Maneuver units' training during weeks five through seven included marksmanship; squad tactical training and patrol operations; fire team and squad rushes; and illuminated night attack scenarios (Ovalle 2003a). Significantly, all maneuver units received only one week of special marksmanship training, which is a reasonable time given the limited training period available for GTEP trainers, but it does not leave much room for complete advanced marksmanship training.

Weeks eight through ten included fire team and squad-level training, followed by three weeks of platoon-level instruction. Training consisted of "formations and immediate action drills, ambushes, patrol base operations and supported attacks in the offense" (Ovalle 2003a). Training for defense began at this point as well. Completing squad and platoon instruction blocks prepared units for training in urban terrain.

Weeks 11 through 13 constituted MOUT training with a focus on offensive and defensive combat tactics, raids, and movement to contact (Ovalle 2003a). This period of

instruction is particularly important for research, as it includes the bulk of urban training GLIBs receive. Training also included collective tasks, such as urban patrolling; cordon and search; and clearing buildings (Ovalle 2003a). These tasks also included all of the urban-specific collective tasks at squad and platoon level listed in ARTEP 7-8-MTP, “Mission Training Plan for the Infantry Rifle Platoon and Squad” (2002). Training also included all tasks, but establishing a roadblock/checkpoint (task 07-2-1401) was valid for the time GTEP began (ARTEP 7-10-MTP 1994).

During week fourteen, training culminated with a company-level daylight attack live fire exercise (Ovalle 2003a). Like platoon live fire exercises, none of the company’s live fire exercises were conducted in built-up areas.

Infantry Combat Skills

A review of training by capabilities supported begins with infantry-specific combat skills. Despite the fact that training was almost all-inclusive for the date, three factors must be considered: the change in collective tasks; battalion-level training; and how complete the training was for planned urban tasks.

The change in collective tasks. ARTEP 7-10-MTP lists two additional urban-specific collective tasks for infantry companies: Control Civil Disturbance Operations (task 07-2-1360) and Conduct Operations with Armored or Mechanized Infantry Vehicles in an Urban Environment (task 07-2-1486) (2002). GLIBs must be trained in these additional tasks because “missions in any environment require Army forces to conduct or be prepared to conduct any combination of ODSS operations” (TC 90-1 2002, 1-1).

Battalion-level training. GTEP training was intended to address only platoons and company collective tasks, so battalion collective tasks are not discussed. These tasks must also be added to the training task list and supported by battalion-level exercises.

How complete training was for planned UO. As previously discussed, units require special facilities to conduct realistic urban training. For GLIBs these facilities were substituted by an improvised training facility--“Bedrock”--an abandoned Soviet construction site that consisted of “concrete slab construction in various stages of completion. None of the structures [had] stairs and most [were] filled with piles of broken bricks and garbage” (Colvin 2003b). Using this site as a training area was a creative approach for the most effective application of available means. Nevertheless, it can hardly be regarded as an effective tool for complete, realistic training. A complete combat training program must emphasize “initial, intermediate, and culminating UO training” (TC 90-1 2002, 1-2). Initial training is a building block to set conditions for further UO training and is composed of mostly individual and crew skills. Intermediate training consists of unit collective training under various conditions. It “should be conducted at, but is not limited to, the breach facility, live fire shoot house, and UAC [Urban Assault Course]” (TC 90-1 2002, 1-3). Culminating training is a possibility to conduct multiechelon, combined arms, and branch-specific situational training exercises. It is conducted at the combined arms collective training facility, which is vital for preparing units for UO, as “realistic training for urban operations is critical to force readiness” (TC 90-1 2002, E-8). In fact, even with limited resources, US trainers achieved significant results by creatively using Bedrock for GTEP training. This training, however, simply could not meet intermediate urban training requirements, as it lacked a

number of conditions and possibilities urban training facilities provided. It was simply impossible to provide full intermediate training in the total absence of a breach facility, a live fire shoot house, and UAC. The absence of intermediate training as a building block leaves no possibility for culminating UO training.

Combined Arms Capabilities

Combined arms training was limited. The only combined arms integration into the training was using the UH-1 utility helicopters for troop movement and medical evacuation. GLIBs training consisted of “safe boarding and exiting procedures for flight operations with the UH-1 helicopters” (Hjelmstad 2003). No training was conducted with other aviation assets or ground units. GTEP was time-phased to train all battalions sequentially. The mechanized battalion was the last to be scheduled, following the GLIBs, so combined training was not possible. GLIB’s combined arms training, therefore, consisted only of using utility helicopters for transportation purposes.

Multinational Training

GTEP was a multinational training program. Training GLIBs by US forces certainly contributed to a “commonality of equipment and the degree of adoption of US Army doctrine and tactics can be the foundation to develop[ing] cooperation and interoperability” with US forces (FM 100-8 1997, 2-17). Having this interoperability foundation with the US is significant for GLIBs in GWOT, as the US is the leading nation in this war. Nevertheless, it is not a stand-alone enabler for multinational capabilities.

Other significant tasks include language training and multinational exercises. All multinational operations command levels determine when “each force resorts to its national language and does not use interpreters” (FM 100-8 1997, A-1). Language capability is another key enabler for effective C2 and coordination inside multinational forces. In UO, where operations are conducted at the small-unit level, such coordination is desirable. However, providing interpreters for each platoon is not realistic or feasible. An inherent language capability inside small units would be more effective. Time constrained, short GTEP training phases obviously could not address language training. While no data are available about GLIB personnel’s linguistic knowledge, expectations at the small-unit level should not be high. A basic knowledge of the English language, however, would allow GLIB personnel to effectively operate with NATO and partner militaries, including leading coalition nations. It would also significantly contribute to the higher effectiveness of multinational exercises.

Multinational participation in exercises during GTEP was limited only to US trainers. No bilateral exercises were conducted at the GLIB level. As GLIBs are currently involved in GWOT in Iraq, command post exercise simulations must be considered as a tool “to provide training in staff action tasks and solve problems in the MNF command structure” (FM 100-8 1997, 5-4). Multinational field training exercises should be employed after a unit’s deployment and are not a requirement for pre-deployment training (FM 100-8 1997, 5-4).

Limited-Visibility Capabilities

GLIBs’ capability to conduct operations during periods of limited visibility was limited to mortar illumination or the bare eye. These options are not quite suitable against

contemporary well armed, well equipped, adaptable threats in a UO. Mortar illumination is more time consuming and less successful in the urban environment and cannot effectively support operations conducted inside buildings. Being able to effectively operate under any condition is essential for light infantry success. Using no night vision or thermal devices denies GLIBs an advantage over the threat and sets an undesirable condition when entering the battle. Training requirements and unit SOPs, however, must be based on limited-visibility capabilities that weapons and observation equipment provide. GLIBs must train under these conditions for each mission essential task, once necessary weapons and equipment capabilities are acquired.

Marksmanhip

Special aspects of UO marksmanship were not the subject of training during the GTEP. GLIBs received individual marksmanship training as part of the program (Ovalle 2003h). Due to the above mentioned constrictions with urban training facilities, this training was conducted on the open firing range. Without a shoot house, UAC, or any equivalent facility available, GLIBs had no possibility of training for reflective shooting and target discrimination. A lack of general urban marksmanship techniques is a significant gap in GLIBs' marksmanship training.

Decentralized Execution

The ability for decentralized execution, a relative factor, is seldom totally absent, and most units possess this ability to a lesser or greater degree. The review of GLIBs in relation to decentralized execution will discuss the requirements in the same format as earlier discussions.

Leadership. Leadership, which is the most critical prerequisite, can be acquired through “the three leader development pillars: institutional training (schooling), operational assignments, and self-development” (FM 22-100 1999, 5-14). Because of the short training period allocated for each battalion (100 days), the institutional training of leaders could not be a part of GTEP training. An important factor to be considered is that the program was “taking a fighting force trained in the Soviet doctrine with Soviet weapons and teaching them (US) tactics” (Mehringer 2003a). In essence, before GTEP, GLIB junior leaders had no knowledge of the doctrine under which they were to be trained. In addition, many soldiers undergoing this training were conscripts with little or no military experience (Ovalle 2003e). It presented a significant challenge for trainers. Obviously, the training cadre had to fill this critical shortage, and junior leaders received significant knowledge through “hands on” training and were tested by live fire exercises. While these successful exercises prove small unit leaders’ abilities to perform certain training tasks under supervision, it cannot be regarded as a basement for success under diverse combat conditions. “Institutional training is critical in developing leaders and preparing them for increased positions of responsibility throughout the Army” (FM 22-100 1999). Absence of institutional training at the junior leader level in GLIBs presents a separate complex set of problems, which cannot be overlooked.

As a leader development tool, operational assignments are the most important sources of training for junior leaders’ development. Different duties and tasks performed during and after GTEP training provided significant on-the-job training. When encountering different problems while performing duties under various conditions, leaders will come up with valid but different solutions. A caution here is that these

solutions, while different from Army doctrine, will not provide “a common language and a common understanding of how Army forces conduct operations” FM 3-0 2001, 1-14).

While operational assignments “provide a powerful resource for leader development,” it cannot be a permanent solution for GLIBs and requires support by institutional training (FM 22-100 1999, 5-15).

Successful self-development, the self-improvement process of junior leaders, requires a certain environment. The two weakest points, relevant to GLIBs in this respect, include immediate superior and additional education. In the best case, leaders of junior leaders received limited institutional training by themselves. Junior leaders might try to master different solutions found by their unschooled immediate superiors instead of trying to master doctrine. Self-study by reading could be a partial counterbalance to this problem, but access to doctrinal publications is a consideration. Doctrinal publications were not included in materiel issued to GTEP, mainly because most junior leaders did not possess sufficient language skills to read it in the original (US Department of Defense 2002). Translating FMs and other relevant publications could be a temporary solution, but it is highly doubtful that the Georgian Army could accomplish this task with its scarce resources in a relatively short period of time.

Call for Fire. Call for fire observer training is not listed among training tasks in any available source. In addition, it is known that the GTEP mortar training package included direct lay and direct alignment (Ovalle 2003i). These types of fire do not require fire direction from supported units, which leads to the conclusion that GLIB units did not have fire direction capabilities at least at the platoon level.

Medical Capabilities. GLIB small unit first aid training presents virtually no problems. During the first four weeks of GTEP, all companies received one week's training in first aid (Ovalle 2003a). And, the training does not require high-level skills and can be easily administered by the battalion medical platoon and conducted by organic CLSs. CLS training was also part of GTEP training and was provided by a forward surgical team during the first three weeks of training (Ovalle 2003c). The level of the training provided by highly professional personnel is not questionable. A significant factor in this regard is the number of combat lifesavers (CLSs) trained per small unit. Open sources do not provide specific information in this regard. The initial number of CLSs trained, however, is not a factor. The training itself is a manageable task for the battalion medical platoon. Having a CLS in each fire team is achievable, but must be set as a goal.

Specialized training for the battalion medical platoon was a focus for the forward surgical team after the initial three weeks of first aid and CLS training with other units (Ovalle 2003c). Medical training itself does not present a challenge, as medics receive sufficient education before entering service. A valuable result of training was tactical skill sets specific to military duties. As for CLSs, the specific number of medics in GLIBs is not available, so it is not clear if they are available for each platoon.

Sharpshooters. It is not surprising that the sharpshooter concept, which is relatively new to the US Army, was not integrated into GTEP training. There is no evidence that GLIBs were issued any optical sights for rifles. No source researched indicates any day optical scope or even close combat optics were issued with small arms (except for snipers). Obviously GTEP trainers could not train sharpshooters without the

proper weapons system available. The absence of such a capability inside small units presents the unexploited possibility of significantly increasing combat power with limited additional resources.

Pathfinder. Pathfinder training was not a separate training task during GTEP, nor was it part of heliborne operations familiarization training, which consisted of “safe boarding and exiting procedures for flight operations with the UH-1 helicopters” (Hjelmstad 2003). It is difficult to say if any of the personnel received pathfinder training from different sources, but it is clear that this skill set does not exist at the desired level in GLIBs.

Demolition. No time was specifically allocated for demolition training during GTEP, and it was not identified as a subordinate task to any of the training packages. The only task listed as “demolitions training” was “claymore anti-personnel mine employment,” which really is a level 1 basic infantry task (Ovalle 2003f). Demolition employment capabilities of GLIBs, therefore, are another shortfall to be identified in training for UO.

Media skills

Media training during GTEP is not mentioned in any reference material available. While it was clearly reasonable not to address non-combat training within extremely time constrained period of instructions, media training remains a critical requirement in preparing GLIB soldiers for UO.

SRQ3. What additional weapons, equipment, and training do Georgian Light Infantry Battalions need to establish niche capability for urban operations?

TRQ3.1.What Weapons Can Be Given to Georgian Light Infantry Battalions in Order to Establish Niche Capability for Urban Operations?

Possible improvements for GLIB capabilities by additional weapons will be discussed in the same format as in previous research questions, by small firearms, antiarmor weapons, and mortars.

Small Arms

Accuracy. Adding optical sights is the most cost-effective improvement available for small arms systems accuracy. They include a large variation of CCO and DOS. Incorporating CCO for each soldier and DOS for designated sharpshooters does not require significant resources. While CCO is designed to increase an individual soldier's ability to engage targets, DOS is an absolute prerequisite to apply to the sharpshooter concept, with its concurrent benefits. The solution can rapidly improve small units' ability to effectively engage targets and increase combat power. It would also increase the unit's self-sustaining ability by decreasing ammunition expenditure, with no concurrent negative effects.

The possibility of cheap improvement of the GP-25 under-barrel grenade launcher's accuracy is presented by the newer model GP-30, which is relatively cheap and will not require additional training for GLIBs, as it closely resembles the older model, fits on the same rifles, and uses the same ammunition. However, GP-30 includes only slight modifications and does not offer a significant advantage in accuracy over the GP-25, which is already on the armament of GLIBs.

L lethality. Under-barrel grenade launchers offer the most significant improvement for lethality by introducing new types of ammunition, such as the “cumulative” antiarmor round, already developed, and the thermobaric round, currently under development (Geibel 2002). While these munitions undoubtedly provide high benefits, with no requirement for additional weapons, their availability on the market remains a problematic consideration.

Limited-visibility capabilities. As GLIBs possess no small firearms weapons system with limited-visibility capabilities, this gap remains the main consideration, along with DOS. Incorporating limited-visibility sights is much more resource demanding than are optical considerations. They are still absolutely necessary to enable GLIBs to dominate the night--a most advantageous condition for the infantry. In addition, they are required in other situations as well, such as during operations under ground or inside large buildings, which require a variety of night vision sights and thermal weapons sights (TWSs). It is important to note that choosing the type, quantity, and ratio of these sights is a complex and largely resource-driven problem.

Firepower and weight. The firepower problem with small arms lies on the fine line between volume and duration of fire and lethality. The problem is also closely tied to weight considerations. The problem becomes critical in UO, because of the increased ammunition expenditure caused by high-intensity fights. An arguable solution to the need for a quantity of ammunition is to reduce the caliber of assault rifles and automatic rifles. Doing so would provide more rounds for the same weight of ammunition supply and reduce weapon weight itself. On the other hand, this solution would cause significant negative effects as well, including the reduced penetration of rounds, higher risk of

ricochet, and the high cost of respectively rearming and reequipping units. A high number of complex and opposite factors makes the answer dependant on specific details and the final decision of authorities. This study, therefore, does not come up with a solution in this regard; rather it identifies the possible topics for further research.

Antitank Weapons

Accuracy. Accuracy presents a great challenge for the RPG-7 grenade launcher. The optical sight provided the system does not offer any improvement over the stand-off distance. There are no other technical means readily available for this weapon. Meanwhile, the short-range accuracy of the only antitank weapon is not acceptable for GLIBs. The only solution to effectively addressing the accuracy problem is to replace or augment RPGs with weapons. Replacing RPG-7s with another rocket-propelled grenade launcher could potentially reduce this problem, but would not even come close to the acceptable level. Arming GLIBs with ATGMs remains the most reasonable option.

Lethality. Some types of ammunition available for RPGs offer more penetration than the regular PG-7 grenade commonly associated with this weapon (RPG Specifications n.d.). While these grenades (PG-7VL, PG-7VR) are capable of penetrating thicker armor, the RPG-7 still needs to achieve several hits to destroy a Soviet-model main battle tank. Once again, the ATGMs provide the only significant option to improving lethality per single launch.

Limited-visibility capabilities. A variety of night vision sights is already available for the RPG-7. In the antitank role, the force cannot depend on mortars to illuminate highly mobile tanks. Therefore, a need for a sight with a limited-visibility capability is axiomatic.

Firepower. A shortfall in antitank firepower can be covered by either increasing the number of weapons systems or by arming GLIBs with highly accurate and lethal antitank assets. Additional RPG-7s would require augmentation or reassignment of personnel. Additional disposable RPGLs, however, offer almost the same capabilities, do not require significant training, and are lightweight enough to be carried by infantrymen in addition to their assigned weapons. The latter allows a concentration of limited antitank assets without reassignment of personnel and provides the possibility of engaging targets from multiple firing positions simultaneously. Along with these positive factors, however, is the even higher degree of technical disadvantages that disposable RPGLs have.

ATGMs, on the other hand, need far less launches to destroy or immobilize tanks. Their probability of hit and high probability of kill per hit rapidly decreases the number of systems required to achieve the same effects as RPG-7s. Employing ATGMs, however, has its own disadvantages; for example, they need specially assigned personnel and are quite expensive. Tactically, the fewer weapons systems employed on the urban battlefield, in the presence of increased cover and concealment, the more area there is under the control of a single weapons system. A concentrated source of antitank firepower is also more vulnerable to destruction.

All these factors recommend the use of a combination of RPGLs and ATGMs. ATGMs can be organized under a company antitank section, as in the US Army, or concentrated at the battalion level. Due to the limitations of this research, ATGM will not be addressed in specific details. Disposable RPGLs, on the other hand, do not need to be carried by individual soldiers all the time. They can be stored at the battalion level and

issued to trained infantrymen, when required, in numbers dictated by the specific tactical situation.

Weight. There is no fixed way of reducing the combat load of weapons and ammunition the gunner carries. Different types of ammunition have different weight (2 to 4.5 kg) but also provide different capabilities (RPG Specifications n.d.).

Mortars

Accuracy. The accuracy of mortars is an integral part of time-constrained UO. For mortar fires, which are intended to provide the key resource commanders use to immediately influence the battle's outcome, responsiveness is a required characteristic (FM 7-90 1992, 3-1). A timely and accurate response is a critical factor in avoiding fratricide and achieving desired effects.

The accuracy of mortar systems at unit level provides two areas for technical improvement: data calculation and ammunition. Currently, answers to these challenges include digital firing data processing (DFDP) systems and PGMM. The purpose of DFDP is to ensure the responsiveness and accuracy of fires by providing precise ballistic calculations in the shortest time possible. The purpose of PGMM is to further increase fire accuracy. PGMM, however, is only a further step in improving accuracy and cannot be employed without firing data.

The mortar ballistic computer is the core of the DFDP system used by modern western armies. “It is used for automated computations, digital communications, and displaying mortar-related information” (FM 23-91 2000, 6-1). Modern ballistic computers are lightweight, highly portable, and weatherproof. Certainly, using pencil and paper under combat stress is no match for digital technology. Integrating digital hardware

into units provides a relatively cheap and highly effective way to dramatically improve accuracy and responsiveness of GLIB mortar fires.

An additional technological solution to the accuracy problem could be to introduce PGMM for light and medium mortars or to introduce 120-millimeter mortars with already existing PGMM. Currently, developing 60- and 82-millimeter PGMM currently is only a theoretical possibility and cannot be considered as a practical solution for the short-term future. Introducing 120-millimeter PGMM, a currently available possibility, is not a reasonable option for the Georgian Army, however, given its limited resources and already existing higher priority problems. In addition, introducing 120-millimeter PGMM is extremely expensive, and a complex consideration closely tied to factors of firepower and weight. As it requires significant augmentation to the current GLIB TOE, replacing 82-millimeter mortars with 120-millimeter falls outside the scope of this research.

Lethality. As discussed earlier, there are no feasible options currently available to further improve GLIB mortars' lethality without augmentation with additional personnel.

Limited-visibility capabilities. The limited-visibility capabilities of GLIB mortars are currently limited to mortar illumination. The integration of limited-visibility devices into mortar weapons systems is an absolute necessity. The main requirement in this regard is the maximum possible observation range, with tolerance even toward higher weight, than small firearms limited capability devices. The solution is resource-dependant, but the best option for GLIBs would be integrating thermal observation equipment.

Firepower. Indirect firepower is a constant consideration in any environment. Generally, “rarely are there enough mortars or ammunition to allow the engagement of every target identified” (FM 7-90 1992, 3-1). For mortar fires, the number of weapons systems and the caliber and amount of available ammunition determine firepower. The number and caliber of mortars in GLIBs is optimal for the light infantry battalion and cannot feasibly be increased. The availability of more ammunition with weapons systems, meanwhile, presents the most considerable way of increasing firepower. There is only a certain amount of weight that can be delivered to mortar positions, so the best way to have more ammunition available for the fire mission is to conserve ammunition from previous missions by increasing accuracy and limited-visibility capabilities. Accuracy can facilitate the same effects on target with fewer rounds, and limited-visibility capabilities decrease the need for illumination missions. Based on these facts, increasing GLIB indirect firepower is directly dependant on the increase of mortar accuracy and GLIB limited-visibility capabilities.

Weight. In the field of mortar systems and ammunitions, as previously discussed, no technological solution offers significant advantages to GLIBs in terms of weight. The weight problem must be addressed by a complex solution that would incorporate the increased accuracy of the mortar and the increased limited-visibility capabilities of the battalion as a whole.

TRQ3.2. What Equipment Can Be Given to Georgian Light Infantry Battalions in Order to Establish Niche Capability for Urban Operations?

A large variety of equipment is currently available that can provide potential improvements for units. To discuss the advantages and disadvantages for each type of

equipment available would require extensive and specialized research and would most likely lead to a broad overview rather than specific conclusions. Instead, the need for additional equipment for GLIBs will be addressed by detailing the shortfalls in capability requirements it must provide.

Protection

A GLIB's protective equipment, limited to Kevlar helmet only, is no match for requirements in preparing for and conducting UO. Protective equipment required, in addition to the helmet, includes body armor, eye and hearing protection, knee and elbow pads, and WMD protection. Significantly, all of this equipment must be integrated into training. Issuing them shortly before going into the UO is not a desirable option.

Body armor serves many different purposes (FM 3-06.11 2002, 3-46). It must be worn in addition to helmets in numerous situations in UO, including operations inside structures, on patrol or convoy, and when exposed to potential sniper fire (FM 3-06.11 2002, 6-13). Despite its stiffness and significant weight, it has proven effective during precision clearing operations. All personnel in a caution zone of recoilless grenade launchers or in the room it is fired from also need to wear body armor (FM 3-06.11 2002, 7-13). Depending on the tactical situation, level III or level IV protection vests might be required. The best solution for GLIBs would be a level IV protection vest with removable armor plates, so it can serve both purposes, as required.

Eye and hearing protection and knee and elbow pads, which GLIBs do not possess, are required in UO. "Goggles or ballistic eye protection should always be worn to protect soldiers from debris" (FM 3-06.11 2002, 3-47). Knee and elbow protectors are also required in UO to "prevent injury from rubble and broken glass when kneeling or

prone” (FM 3-06.11 2002, 3-47). In combination, ballistic eyewear and knee and elbow pads “significantly increase the mobility of infantrymen in urban combat” (FM 3-06.11 2002, 1-19). In summary, to avoid unnecessary risk, it is an absolute must in UO for each soldier to be issued knee pads, elbow pads, eye protection, and hearing protection in addition to standard unit issue items (FM 3-06.11 2002, I-2). GLIBs are no exception.

It is an obvious requirement for units to “be prepared to assume an adequate NBC defensive posture when conducting urban operations” (FM 3-06.11 2002, F-1). GLIBs, however, have no NBC protective equipment to rely on in case of NBC attack or incidents of TIM release. Myriad protective equipment available on the market provides an easy way to fill this gap and eliminate this unnecessary and critical vulnerability.

Command and Control

Capabilities of GLIB’s communications equipment will not be discussed in specific detail, mainly because of classification considerations. There are, however, additional general requirements GLIBs must meet to be effective in UO. Possible fields of improvement of C2 capabilities can be classified into three main categories: digital, frequency modulation radio, and wire communications.

Presenting digital communications capabilities to GLIBs, while offering great advantages, requires not only acquiring hardware and software, but also highly trained personnel, and are not presently feasible for an army with constrained resources.

Frequency modulation radio communications, for regular infantry battalions, require general hardware augmentation in order to be effective in UO. Possible solutions for this challenge, suggested by doctrine, are “remoting the antennas to upper floors or roofs . . . [and] the use of radio retransmissions” (FM 3-06 2003, 12-2). Harris radios are

able to act in the retransmission mode as well. This technical feature provides an option of either adding retransmission equipment or increasing the number of radios needed.

Remote antennas, in addition to improving communications, also provide passive protective measures against precision-guided munitions and electronic warfare.

Wire communications is another required capability not provided by GLIBs' organic assets. It was not a requirement for the mission GLIBs initially were designed for. In UO, however, this type of communications is especially important. Radio retransmissions and remote antennas decrease urban effects on radios but cannot totally eliminate them. For this reason, in UO, wire communications are a more secure and effective means of communications than in urban areas (FM 3-06.11 2002, 12-2). It has its own disadvantages as well because "emplacing wire takes time and can be cut by enemy artillery" (FM 7-90 1992, 7-21).

In summary, digital equipment is not feasible for GLIBs. Augmentation with wire communication assets and additional radio equipment, simultaneously, would significantly increase the capabilities of C2 equipment and provide mutual back-up.

The total absence of sophisticated IFF equipment is another significant consideration with GLIBs' C2 equipment. This equipment will be especially valuable in the short-term future when positive identification will be more restricted because of the lack of language skills in GLIBs, especially at small-unit levels.

Observation and Surveillance Equipment

General considerations regarding observation and surveillance equipment in GLIBs include the number of assets available, limited-visibility capabilities of these assets, and vulnerability to detection. The need for more assets is caused by the need of

more observation posts and to be considered with any equipment associated with them. In addition, requirements for NBC-surveillance equipment per each company must be considered because of the specific characteristics of urban terrain. The requirement for limited-visibility capabilities are axiomatic prerequisites for preventing the observation post from turning into virtual listening posts. With current threat capabilities, however, acceptable types of observation equipment are more limited. The increased presence of IR identification in the hands of all potential threats in OU dictates the need for passive night observation devices. The correct mixture of thermal and night vision assets must be maintained and present the same considerations as limited-visibility capabilities for weapons systems.

Special Equipment

Special-equipment requirements are mainly mission driven and cannot be anticipated in advance. There is no universal list of special equipment for UO. It depends on a unit's Standing Operating Procedure (SOP) and changes as the anticipated mission and unit SOP changes. Each GLIB's requirement in this regard will be unique, and might vary based on the approach on how to accomplish specific tasks. FM 3-06.11 provides a sample list of special equipment individual unit commanders may use to develop own mission-oriented equipment lists, within the respective authority (2002, I-1).

TRQ3.3. What Additional or Substitute Training Can Be Given to Georgian Light Infantry Battalions in Order to Establish Niche Capability for Urban Operations?

The review of additional training requirements for GLIBs follows the same pattern as the review of training effectiveness. It will be built around the following areas:

infantry combat skills, urban marksmanship, ability for decentralized execution, combined arms, multinational operations, and media training.

Infantry Combat Skills

Major challenges GLIBs face in infantry combat skills include requirements for additional tasks, higher level unit training, and improved training facilities. Additional tasks that GLIBs need to be trained for include those tasks not specifically addressed during GTEP training. While battalion METL might be oriented on combat missions, subordinate units still must be trained for tasks such as “Control civil disturbance operations” (ARTEP 7-10 MTP 2002). Additional tasks are required to enable GLIBs to conduct full spectrum operations in UO.

Training at higher unit levels is an obvious requirement, as the highest levels for this training were platoon nighttime and company daytime operations. This requirement encompasses battalion-level exercises, including live fire exercise (LIVEX), as well as command post exercises conducted with higher headquarters. Training as a whole unit is a prerequisite for successful synchronization of larger scale military operations.

Training facilities are a consideration at all levels of units in GLIBs. This requirement allows for a flexible approach but cannot be addressed below minimum standards. Before necessary funding is available for UAC, shoot house (SH), breaching facility (BF), and combined arms collective training facility (CACTF), discussed above, less-sophisticated versions of training facilities, such as “MOUT assault course (MAC) and Collective Training Facility (CTF) . . . can be used as substitute facilities along with nonstandard shoot houses” (TC 90-1 2002, A-8). In addition, nonstandard facilities, such as tire houses, might may be used when not in conflict with local range regulations and

risk analysis (TC 90-1 2002, A-9). A remarkable factor is the cost-effectiveness of these high resource demanding assets. While costly, they are absolutely necessary for preparing units for UO. While adequate training facilities can serve as a temporary substitute, their total absence or insufficiency undermines realistic UO training and might lower unit readiness status to an unacceptable level.

Combined Arms Training

Combined arms training as a combined arms and joint team is a required principle of effective training (FM 7-0 2002, 2-1). Because “Army doctrine places a premium on teamwork, [GLIBs] must be prepared to execute combined arms and services operations without additional training or lengthy adjustment periods” (ARTEP 7-20 MTP 1994, 1-2). All the GLIBs might not conduct heliborne operations, and this training must be sustained in accordance with higher METL. Meanwhile, all the GLIBs must be trained to conduct operations with armored or mechanized vehicles in an urban environment at platoon, squad, and company levels (ARTEP 7-10 MTP 2002).

Multinational Training

Training for multinational operations includes two major requirements for GLIBs: language training and multinational exercises. Effective language training is time-consuming and must be addressed at the earliest stages possible. For GLIBs, the language required for multinational planning and coordination in the US-led GWOT is English. English will also facilitate relations with all NATO member military contingents in the same area of operations. The target audience depends on resources available for this task and might require a gradual approach. Initial trainees might include only battalion staffs,

company commanders, and key personnel, such as FOs. Providing language training for all soldiers is neither essential nor feasible. The goal for language training, however, must include at the minimum platoon and squad leaders.

The need for multinational exercises for GWOT is partially eased by similarities. Common doctrine and equipment make it easier to conduct operations with US troops in particular and with most Western troops generally. Within this common basis, the required intensity of pre-deployment multinational training is directly related to the equipment and training level of a particular GLIB. The better trained the battalion and individual headquarters become, the less additional multinational training with GWOT alliance military contingent will be required.

Limited-Visibility Capabilities

Limited visibility is a training condition applicable to virtually every infantry task. And, because of its complexity and importance, conducting operations under limited visibility is listed as a separate task for infantry platoons, squads, and companies (ARTEP 7-10 MTP 2002). As previously discussed, this training is largely based on limited-visibility capabilities provided by weapons and observation equipment. Acquiring this materiel base is an essential prerequisite to initiating effective limited-visibility training for GLIBs.

Marksmanship

GLIB marksmanship training requirement for UO includes two major areas: reflexive shooting and target discrimination, which might become more critical requirements in UO, than will precision. It is important to notice, that properly equipped

training facilities are necessary to conduct urban marksmanship training, and might require resources not organic to GLIBs. Improvement of marksmanship training, therefore, cannot be addressed by only unit-training management and requires a more complex solution.

Decentralized Execution

Additional training areas of consideration in support of GLIBs' ability for decentralized execution include leadership, medical, call for fire, pathfinder, and demolitions.

Leadership. Small-unit leaders' training is the most urgent consideration in this regard. Establishing an institutional training base for junior leaders is a necessary requirement, but will not be specifically addressed due to the scope of this research. Effectiveness of operational assignments, as a leader development tool, depends on a parent unit's equipment and readiness level. It also depends on a commander's confidence in subordinates and willingness to delegate authority on a case-by-case basis. Improvements in this area must be based on institutional knowledge and self-development. Self-development represents the only leader training tool manageable at GLIB level. Providing access to military and other scientific reference material for junior leaders is the key for success in this regard. Providing access includes both--providing already available materiel and providing language training to enable the wide use of doctrinal and other military publications, which are mostly in English.

Medical. No specific gap in medical training can be positively identified based on information available in GTEP reference material. The number of CLSs, trained per GLIB, however, is unclear. In this regard, this issue must be identified as a significant

consideration rather than an existing problem. It is critical for GLIBs to maintain a CLS qualified soldier in each fire team or equivalent element in order to have sufficient medical capabilities required for UO.

Sharpshooters. Employing the sharpshooter concept would allow GLIBs to enhance organic direct fire support at the small-unit level. The best marksman in each squad should be designated as a sharpshooter, allocated necessary resources, and properly trained. A key resource required in this regard would be day optical scopes.

Call for Fire, Pathfinder, and Demolition. As previously identified, call for fire, pathfinder, and demolitions skill sets were not addressed during GTEP training, at least at squad and platoon levels. While all these skills are needed for infantry battalions, the ability of each platoon to call for and adjust indirect fires and the ability of each fire team to fulfill limited demolitions tasks are the most critical requirements for GLIBs in this regard.

Media Skills

With the increased presence of media on the battlefield, GLIBs have no less need to “educate soldiers . . . on their rights and responsibilities with respect to media representatives” (FM 3-61.1 2000, 3-11). Media awareness training for GLIBs will require external assistance from public affairs personnel and should be conducted “in two parts, first in a classroom, then in the field” (FM 3-21.21 2003, K-3).

CHAPTER 5

RECOMMENDATIONS

An analysis of the problem clearly answers the main research question: GLIBs obviously require additional weapons, equipment, and training to establish a niche capability for urban operations.

This chapter identifies current requirements and provides recommendations for improvements and for further research, wherever more detailed analysis is required because of the complexity of the specific problem. Recommendations will be further classified as necessary, desirable, and possible. Recommended improvements will be discussed by weapons, equipment, and training. All recommendations will be based on information and conclusions provided in previous chapters.

Weapons

Additional requirements for weapons systems can be generally classified as small firearms, antitank weapons, and mortars.

Small Arms

Necessary requirements for small firearms include optics for sharpshooters and limited-visibility capabilities. The type and number of optics sharpshooters require is distinctly clear. For this purpose, DOS is required, as CCOs do not provide the necessary enhancement. The number of DOSs needed is the same as the number of maneuver squads in GLIBs to allow having a sharpshooter per each squad.

The type and number of limited-visibility assets to be added to GLIB weapons systems is a resource-driven and arguable issue. The starting point for this discussion

must be available funding and the price of each optional unit. Such information is not currently provided by open sources. For this reason, instead of providing specific details, the recommendation is limited to identifying the need for more detailed research and an immediate solution of this urgent problem.

Other possible ways to improve GLIBs' small firearms capabilities include CCO, a newer model of the existing under-barrel grenade launcher (UBGL), and new type of ammunition for the UBGL. Adding CCO to Kalashnikov weapons systems, which are not known for accuracy, provides an option for significantly increasing the effectiveness of individual automatic rifles and machine guns. In cases where resources are restrictive, however, they must not be given higher priority than DOS and limited-visibility assets.

Replacing the current GP-25 UBGL with its newer version--GP-30--would not necessitate any modifications to base rifles or ammunition and would be an easy and cheap option. Doing so would provide only slight improvements so, arguably, must be given the last priority, if any at all.

Additional UBGL ammunition, such as a "cumulative" round with a limited antiarmor capability already available in foreign production, provides an effective way to enhance this weapons system's capabilities. While desirable, however, this augmentation is not absolutely necessary and would require a more logistical solution than a tactics-based decision.

A significant consideration for small firearms is the caliber of assault rifles and medium machine guns. As previously discussed, available 7.62-millimeter weapons provide more penetration than smaller 5.45- or 5.56-millimeter equivalents, but are also heavier. A decrease in the current caliber might result in higher effectiveness for GLIBs,

or it might result in adverse effects. Replacing hundreds of weapons systems per battalion could create significant logistical considerations. Because of its complexity, this option is recommended as a subject for further research.

Antitank Weapons

Necessary improvements for antitank weapons include augmentation with limited-visibility capabilities and disposable RPGLs and augmentation or replacement of RPG-7s with ATGMs. Available limited-visibility elements for RPG-7s currently include active IR and passive night vision sights. Because of the negative consequences of the IR signature on the battlefield, only passive night vision sights are an acceptable option for GLIBs. It is important to note that these sights do not totally satisfy limited-visibility requirements toward antitank weapons systems, and none of the available RPG sights provide thermal imagery capabilities. Augmentation of existing weapons systems with night vision sights is necessary but will not completely solve the existing problem.

Adding disposable RPGLs would provide a cheap and fast response to the immediate need for increased antitank firepower. This augmentation, while absolutely necessary, would also provide a partial solution but does not completely eliminate the problem.

ATGMs represent the only effective way to compensate for the technical limitations of RPGLs, which cannot be compensated for by a numerical increase. The advantages ATGMs provide include thermal sights, higher standoff distance, accuracy, and penetration. On the other hand, they also have a number of disadvantages, such as heavier weight and concentration of firepower. Possible options for employing ATGMs include replacing RPG-7s with disposable RPGLs or augmentation of RPG-7s and RPGL

together. Any of these options, however, would require significant changes in the TOE and is outside the scope of this research. Because of its vital importance, additional research has to be done to identify the optimal type, number, and ways of integrating ATGMs into the GLIB structure.

Mortars

Mortar systems require urgent augmentation within two major areas: digital firing data processing (DFDP) and limited-visibility capabilities. Available sources suggest that currently GLIBs possess none. Integrating mortar ballistic computers and associated digital links is required to provide GLIBs with timely, accurate, and reliable organic indirect fires.

Limited-visibility capabilities of mortar systems over longer distances are critical because of the long ranges of fire. Providing thermal observation devices to FOs is the easiest and most effective way to do this. In addition, integrating thermal targeting would not require changes in any other component of the mortar system.

Another consideration in regard to 82-millimeter mortars is the probable advantage of replacing them with heavier 120-millimeter tubes. This change would help improve this weapons system, to include higher lethality and the possibility of using PGMM rounds. In return, several negative effects, such as intensive resource expenditures, significantly increased weight, and a series of changes to TOE and TTP must be negotiated. For these reasons, the feasibility of increasing the current mortar caliber from 82- to 120-millimeter is another recommended research topic.

Equipment

Additional requirements for equipment will be discussed in the categories of protective equipment, C2, observation and surveillance, and special equipment.

Protective Equipment

None of the protective equipment required can be given lesser priority because they are all necessary for safely conducting realistic training and, ultimately, for mission execution. Protective equipment required for GLIBs, in addition to helmets, include body armor, eye and hearing protection, knee and elbow pads, and NBC protective gear.

The requirement for body armor includes both level III and level IV protection vests to allow for flexibility in the combat load. This is necessary to balance different requirements for mobility and protection required in different tactical situations.

Equipping GLIBs with level III protective vests with detachable level IV protective plates would save resources and avoid an unnecessary increase of equipment items.

Eye and hearing protection and knee and elbow pads are required during training and during combat. Eye protection, however, is necessary for any soldier in urban environments, while the requirement for knee and elbow pads mostly remains the prerogative of maneuver units.

NBC protective gear is another set of protective equipment that is totally absent in GLIBs. While there are significant factors to be considered, such as the mobility and communication restrictions and weight, the type of NBC protective equipment GLIBs will receive will most probably be more resource- than requirements-driven. Gas masks and protective overgarments are not part of the normal battle dress uniform but are

absolute necessity when WMD threat arises. NBC protection remains one of the most important requirements in this category.

Command and Control Equipment

Options for improving GLIB C2 equipment consist of communications and IFF equipment. The necessary requirements in regard to communications equipment are in two general areas: radio and wire communications. Radio communications need augmentation with additional hardware, such as remote antennas and retranslators. Additional radio stations with proper capabilities might also be used in a retranslator role. This augmentation is specifically needed to address challenges presented by urban environment. Another required set of equipment--wire communications hardware--is totally absent in GLIBs. A sufficient quality and quantity of equipment is needed to provide backup communications for all the deployed stationary elements of the battalion. The types and number of equipment, however, depend on available resources that are compatible with existing radio equipment, and tactical and technical characteristics. While augmentation with wire communications assets will involve significant changes in TOE and TTP, because of its critical importance, this problem must be addressed. However, because this subject is considered sensitive, it will not be addressed here. Effective ways to augment GLIBs' communications equipment to meet capability requirements in UO is another proposed subject for possible classified research.

IFF equipment is another possible option for improving GLIBs C2 equipment. Thermal and night vision sights are required, however, for using these devices. For this reason, integrating special IFF equipment is only feasible after integrating limited-visibility capabilities for weapons systems.

Observation and Surveillance Equipment

Necessary requirements for augmentation of observation and surveillance equipment in GLIBs include the need for additional day optical devices, limited-visibility assets, and NBC-detection devices. The number of day optical devices needed is directly related to the type and number of optical sights available with organic weapons systems. Without DOS being integrated in small firearms, at least twice the number of available optical assets will be needed to effectively address the challenges of increased cover and concealment in urban terrain.

Limited-visibility-capable observation devices, in addition to quantity, present qualitative demands as well. A proper mix of thermal and night vision assets and avoiding IR signatures are two nonnegotiable requirements in this regard. They too are directly tied to equivalent capabilities of weapons systems. The need for a decentralized NBC-surveillance capability also requires companies to be equipped with portable, user-friendly NBC-detection equipment. While requirements regarding additional day optical devices are comparatively clear, an optimal mixture of thermal and night vision observation devices and integration of NBC-surveillance equipment present another possible area for more detailed research.

Special Equipment

Available open-source reference material does not provide enough information to determine type, quality, or quantity of special equipment in GLIBs. For this reason, its sufficiency cannot be analyzed here.

Training

Recommendations for additional training for GLIBs are discussed in the following areas: infantry combat skills, combined arms, multinational, limited-visibility, marksmanship, decentralized execution, and media skills.

Infantry Combat skills

Requirements for improving GLIB combat training include additional collective tasks training, higher unit-level training, and provision of sufficient training facilities. Additional skill sets are required to prepare GLIBs for full spectrum operations. An example of such a task is controlling civil disturbance operations at the company level, which is not included in GTEP training. Available material does not allow for clear identification of all GTEP training tasks. However, a complete list of collective tasks by unit levels is given in respective training manuals that provide easy ways to identify the required additional training tasks for individual GLIBs.

Higher unit-level training encompasses the need for battalion-level exercises culminating in live fire exercises and systematic command post exercises (CPXs) conducted as a part of parent unit. The need for sufficient training facilities is an infrastructure requirement directly related to the GLIB's ability to conduct safe, realistic training. None of the current facilities identified in reference material closely meets this requirement.

Combined Arms

No information is available to suggest that GLIBs have received any kind of combined arms training, except for familiarization flights on helicopters. Training as a

combined arms team, however, especially with armored and mechanized units, is another necessary prerequisite for effective, realistic training. Training must fully involve platoon- and company-level collective tasks that lead to higher-level command post exercise (CPX) and live fire exercises.

Multinational

Additional capability requirements for GLIBs in conducting multinational operations in the GWOT are mainly determined by the need for English-language training and multinational exercises. Language training is a necessary tool to further effective communications by allowing direct, interpersonal relations in multinational environment and familiarization with the doctrine and TTP of coalition forces. An additional benefit of English-language skills for leader development is addressed later. The need for pre-deployment multinational exercises encompasses CPX and tactical exercises without troops and provides the basis for successful urban operations, where communications are restricted and greater understanding of common TTP is emphasized.

Limited-Visibility Capabilities

A limited-visibility capability is another necessary requirement that needs a more complex approach, following the consecutive steps of integrating sufficient weapons and equipment; training for individual tasks; training for collective tasks at squad, platoon, and company levels; and realistic training at the battalion level, using a reverse training cycle.

Marksmanhip

The requirement for urban marksmanship training encompasses critical skills of reflexive and discriminative shooting. Because of the need of proper training facilities, marksmanship training is largely dependant on logistical support. Possible integration of CCO in small firearms would also require additional training as well as greatly increasing units' combat power.

Decentralized Execution

Only those training requirements that support decentralized execution at the battalion level will be addressed. They include small-unit leadership and medical, call for fire, pathfinder, and demolitions capabilities.

Leadership

Small-unit leader development at the GLIB level can be effectively enhanced only by supporting self-development by providing access to study materials, which can be made available by providing units with libraries. To ensure access to doctrinal publications, however, mostly available in English, additional language training would be required. Junior leaders will gain operational experience over the years. The focus must not be on trying to develop them within a constrained time, but to create a “correct lane” for their effective development.

Medical

Training provided at the unit level to enhance medical capabilities includes first aid and CLS training. In GLIBs, first aid training is provided to every soldier and is not a consideration. There are no resources, however, to confirm the availability of CLS

trained personnel in GLIB small units. The recommendation, therefore, will be limited to proposing the maintenance of a CLS in each fire team or equivalent-size unit. Recommendations do not address the need for additional combat medics, as this augmentation would require changes in TOE.

Sharpshooters

Sharpshooter training depends on the availability of DOS for each designated soldier. Once equipped, however, they would need only limited technical, and virtually no additional, marksmanship training, as essentially, they would be the best marksmen in the unit. Emphasis then should be made on tactical training and integration through field exercises.

Call for Fire, Pathfinder, and Demolition

Available information does not suggest that GLIB small units have any of the required skill sets to provide demolition capabilities per fire team, call for fire capabilities per platoon, or pathfinder-qualified personnel per company. In fact, it would be more reasonable to assume that GLIBs were provided none of these. While units can acquire demolitions and pathfinder capabilities by providing specialized training to designated soldiers, acquiring call for fire capabilities will most probably require personnel augmentation. For this reason, how to provide call for fire capabilities to individual GLIB platoons is another proposed research topic.

Media Skills

Media training requires limited resources but is absolutely necessary in the contemporary operational environment. With initial external support, GLIBs can easily

initiate and maintain media education and training, not only for soldiers but for their family members as well.

Summary

This work is an effort to identify critical shortfalls and present recommendations for further improvements or research in regard to weapons, equipment, and training for GLIBs in order to further enhance their ability to conduct urban operations in the GWOT. As ways for improvement are limited by resources and other constraints in any Army, and depend on the commander's decision, the intent was not to present a specific action plan, but rather to provide an initial framework for its development. If successfully employed, these improvements can significantly support the evolution of Georgian light infantry battalions as they strive to improve to better serve the country.

GLOSSARY

Breach Hole. “An opening that is made in a structure using mechanical, ballistic, explosive, or thermal means to facilitate the entry of assault elements. A breach hole is normally 50 inches high by 30 inches wide in size” (FM 3-06.11 2002, 7-2).

Collateral damage. “Collateral damage is unintended and undesirable civilian personnel injuries or material damage adjacent to a target produced by the effects of friendly weapons” (FM 3-06.11 2002, A-2).

Combined Arms. “Combined arms is the integrated application of several arms to achieve an effect on the enemy that is greater than if each arm was used against the enemy separately or in sequence” (FM 7-0 2002, 2-3).

Firepower. “The amount of fire which may be delivered by a position, unit, or weapon system” (JP 1-02 2001, 200). In this thesis it is interpreted as an ability to deliver sufficient volume of fire over sufficient period of time required to achieve desired effects, under given circumstances.

Full spectrum operations. “The range of operations Army forces conduct in war and military operations other than war” (FM 3-0 2001, 1-4). “Full spectrum operations include offensive, defensive, stability, and support operation” (1-15).

Hostile. The term “is used as a subset of the threat and denotes a particular element of the urban population (individual, group, or organization) or one or more opposing armed factions in a peacekeeping operation” (FM 3-06 2003, ix).

Information operations. “The employment of the core capabilities of electronic warfare, computer network operations, psychological operations, military deception, and operations security, in concert with specified supporting and related capabilities, to affect or defend information and information systems, and to influence decisionmaking. This definition supersedes the definition of IO in FM 3-0” (FM 3-13 2003, iii).

Loophole. “A firing aperture (a minimum of 8 inches in diameter) made in a structure” (FM 3-06.11 2002, 7-2).

Military Operations on Urbanized Terrain (MOUT). “All military actions that are planned and conducted on terrain where man-made construction affects the tactical options available to the commander. These operations are conducted to defeat an enemy that may be mixed in with civilians” (FM 90-10-1 [obsolete] 1993, 1-1).

Mousehole. “An opening that is made to the interior or exterior of a structure (walls, floors, ceilings, roofs) to facilitate inter- and intra-building communications and movement. A mousehole is usually a minimum of 24 inches high by 30 inches wide in size” (FM 3-06.11 2002, 7-2).

Reflexive shooting. “Proper weapon ready technique, stance, aiming, shot placement, and trigger manipulations constitute reflexive shooting” (FM 3-06.11 2002, 3-35).

Threat. Term “is applied broadly to include an enemy force (conventional or unconventional), an armed belligerent in a peace operation, antagonistic or unfriendly elements of the civilian population, or some other hazardous condition in the urban environment that negatively influences mission accomplishment” (FM 3-06 2003, ix).

Urban Area. “A topographical complex where manmade construction or high population density is the dominant feature” (FM 3-06, pg. 1-3; FM 3-06.11, pg.1-1)
“Operations planned and conducted in an area of operations (AO) that includes one or more urban areas” (FM 3-06.11 2002, 1-1).

Urban environment. “Includes the physical aspects of the urban area as well as the complex and dynamic interaction and relationships between its key components--the terrain (natural and man-made), the population, and the supporting infrastructure--as an overlapping and interdependent system of systems” (FM 3-06 2003, 1-3).

Urban operations. “Urban operations include offense, defense, stability, and support operations conducted in a topographical complex and adjacent natural terrain where manmade construction and high population density are the dominant features” (FM 3-0 2001, 6-19).

Weapon(s) system. “A combination of one or more weapons with all related equipment, materials, services, personnel, and means of delivery and deployment (if applicable) required for self-sufficiency” (JP 1-02 2001, 574).

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